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TRANSACTIONS

OF THE

VERMONT STATE MEDICAL SOCIETY

FOR THE YEAR 1902

ANNUAL MEETING for 1903

At BELLOWS FALLS,

OCTOBER 15th AND 16th.

FREE PRESS ASSOCIATION
PRINTERS AND BINDERS
BURLINGTON, VERMONT
—— 1902 ——

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TRANSACTIONS

OF THE

EIGHTY-NINTH ANNUAL MEETING

OF THE

VERMONT STATE MEDICAL SOCIETY,

HELD IN

Burlington, October 9 and 10, 1902.

The Society was called to order in the Y. M. C .A. Hall, on Thursday morning, October 9, at 10.20 o'clock, J. B. Wheeler. President, in the chair.

Prayer by Rev. G. G. Atkins of Burlington, Vt.:

Our Father in heaven, we thank Thee that in all concerns of life, we can come unto Thee. Be assured, if we try to do good, we can always get Thy blessing. We pray Thee for Thy blessing for this council, their work, which is Thy work, the work of healing, the work of saving men and women from sorrow. We thank Thee for the unselfishness of these men and for their firmness and kindness. We pray Thee that some sense of the nobility of this work may fill

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every member of this council. We pray Thee for the Commonwealth, the Governor and our Assembly, and we ask Thee that Thy Spirit may be with us in these troubled times of famine and that Thou wilt help us: in the Master's name, Amen.

The records of the last meeting were read by the Secretary and approved as read.

The report of the special committees on reorganization was presented by the chairman, D. C. Hawley of Burlington, as follows:

Leading up to a better understanding of the Constitution with regard to the desirability and necessity of adopting a new Constitution, I would like to read a report.

The Committee on Reorganization are pleased to report that they have done the work assigned to them with the following results:

County societies have been organized, or reorganized in all the counties of the State with the exception of Essex and Grand Isle. Bennington County has been reorganized. The Society had not been holding meetings for years. Rutland County has been reorganized. Windham County had no society in existence; there had been one and it was reorganized. This change fell into the hands of Dr. Hamilton. Windsor was reorganized. Orleans was reorganized. This was done through Dr. Huntington, he visiting the various towns. In Franklin County there was a reorganization of the old Franklin County Society. Orange organized a new society in July; Caledonia a new society in September. Chittenden reorganized as the Chittenden County Clinical Society. In Essex County we found that there were but seven regular physicians and they were so scattered that it seemed impossible to reorganize, therefore, those living in the south-

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ern part of the County joined with Caledonia County and those living in the northern part joined with the Island Pond Society. With Grand Isle it was found that it would be agreeable to join with the Franklin County Society and the Chittenden County Society. Those living in the northern part joined with Franklin County and those in the southern part with Chittenden County. The work has been done as well as could be expected. The number is in excess of 300. (Mr. Secretary, will you give me the exact number? Dr. G. H. Gorham—353 members reported.)

In some instances these societies will increase their membership. Caledonia, I think, will increase her membership materially. Some, of course, will not. At the same time, that is a very good showing; 353 is a larger number than has been in the Society at any one time, that is, in good standing. The average has been from 200 to 225. I think without doubt, that under the new scheme we will have about 400 members at the next annual meeting. We did not feel that we needed the work of an organizer, but the three members of the committee have visited the districts given to them and thereby done the work without the expense of a paid organizer. I would like to make a motion, Mr. President, that the Constitution as reported last year be now adopted. The Committee on Reorganization has one or two suggestions and they will be presented by Dr. Hamilton, but I make the motion that the Constitution as amended last year be adopted and that we organize and do the business of this session under it.

Dr. J. M. Hamilton moved that Article II should be amended to read as follows: "Each affiliating county society in the State shall be entitled to elect one delegate for every ten active members and one for any additional fraction of

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more than half that number to represent it at the annual meeting of the parent society.

At the first annual meeting one half, or as near as may be, of said delegates shall be elected to serve two years and the remainder for one year.

At each subsequent annual meeting a sufficent number of delegates shall be elected to complete the quota of that society.

Alternates may be elected, or appointed by county societies to serve in place of delegates."

Also that Article IX be amended to read as follows: "The House of Delegates may adopt such By-Laws, not repugnant to this Constitution and may repeal, alter or amend the same in such manner as a majority of said House of Delegates at any annual meeting may deem proper."

The aforesaid amendments were accepted and the new Constitution as amended was adopted.

The Report of the Treasurer and of the Acting Treasurer were read by the Secretary and the same were acccpted.

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TREASURERS' REPORT.

VERMONT STATE MEDICAL SOCIETY,

In account with

JOHN WAITE AVERY, M. D., Treasurer.

1901.		CR.	
Oct. 11.	Dues collected by Pres. Huntington at Montpelier		$138 10
" 18.	Drug exhibits at Montpelier session		46 00
" 18.	Funds from ex-Treas. Allbee		509 56
" 18.	Fees from Board of Censors		90 00
	Dues from members Oct. '01 to Aug. '02		285 00
			$1068 66

1901.		DR.	
Oct. 11.	Janitor's fee, Montpelier session		5 00
" 11.	Peters, printing		10 00
" 11.	Sec. Hawley, bill of sundries		98 75
" 14.	Dr. Weeks, hotel bill, Montpelier session		2 25
" 14.	Dr. Wiggins, hotel bill, Montpelier session		2 00
" 28.	Dr. Tinkham, Board of Censors' bill		71 09
" 28.	Free Press Ass'n, printing Transactions, etc.		162 48
Nov. 13.	Dr. Strobell, Censors' bill		26 00
" 15.	Dr. Platt, Censor's bill		5 84
" 19.	Tuttle Co., printing		7 50

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Dec. 9.	Nellie Gill, stenographer, Montpelier..	11 50
" 17.	Sec. Hawley, expense	8 29
" 17.	Free Press Ass'n, printing.....	7 50
1902.		
Feb.	Sec. Gorham, printing.....	2 75
Aug.	Check to bal. to Sec. Gorham.....	647 68
		$1068 66

VERMONT STATE MEDICAL SOCIETY,

In account with

GEO. H. GORHAM, M. D., Acting Treasurer.

CR.

Aug. 7.	By cash from J. W. Avery.....$647 68	
	By cash from dues.....	78 00
	By cash from Geo H. Gorham, Sec'y.....	3 66
	By cash from Geo. H. Gorham, Sec'y, from sale of books	5 17
	By cash from W. H. Vincent, Treas. Board of Censors	108 75
		$834 60

DR.

Aug. 12.	To E. L. Hildreth & Co., printing Transactions and postage $215 50	
	To express	80
Sept. 26.	To postage	1 48
Oct. 4.	To Truax & Co., printing.....	14 50
" 4.	To J. W. Avery, postage.....	5 15
" 4.	To Henry Janes, expenses as Censor....	29 64
" 4.	To S. W. Hammond, expenses as Censor..	53 86

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" 4.	To W. H. Vincent, expenses as Censor..	37	10
" 4.	To postage	1	00
" 6.	To express		25
" 8.	To Truax & Co., printing.....	2	25
" 8.	To W. D. Huntington, expenses Reorganization Committee	29	91
" 8.	To J. M. Hamilton, expenses Reorganization Committee	18	47
" 8.	To D. C. Hawley, expenses Reorganization Committee	11	70
" 8.	To the Tuttle Co., printing for Reorganization Committee	20	00
" 8.	Cash on hand to balance.....	392	99
		$834	60

Respectfully submitted,

GEO. H. GORHAM,

Oct. 9th, 1902. Acting Treasurer.

Examined and approved,

(Signed) H. R. WATKINS, Auditor.

The Secretary, Geo. H. Gorham, presented his annual report and the same was accepted.

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SECRETARY'S REPORT.

Mr President and Members of the Vermont State Medical Society:

Unlike former reports, I can state that the past year has been one of the most important in the history of the Society. The question of reorganization, which has been agitated in our Society for a number of years, was definitely settled upon one year ago at which time a new Constitution and By-Laws were accepted and the latter adopted. To-day I have no doubt but what we shall see the culmination of our efforts in that direction by the adoption of the new Constitution, and thus put ourselves in direct affiliation with the American Medical Association, according to the rules laid down by that society.

A special committee on reorganization, consisting of Drs. D. C. Hawley, J. M. Hamilton and W. D. Huntington, was appointed one year ago and as a result of their labors we have county societies established in twelve out of the fourteen counties in our State, and all in affiliation with our Society. The wisdom of this change is seen in an increase of 65 per cent. in our membership. The committee are certainly to be congratulated upon such a result.

There are still remaining quite a large number of regular physicians who have not joined a county society. I would urge upon the officers and members of the several county societies to make strenuous efforts to induce them to become members of their local organization.

I desire at this time to call your attention to Article 10 of the By-Laws, which clearly and plainly states that "all

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addresses and papers presented to the Society thereby becomes its property and shall be placed in the hands of the Secretary within one week after the meeting for insertion in the Transactions." Last year some of the papers which were presented at our annual meeting in October did not reach me until February. I understand that the former Secretary had similar trouble. This is not right, for it not only occasions great annoyance to the Secretary, but it delays the issuing of the Transactions and thus the whole Society is affected.

On August 1st Dr. Avery resigned the office of Treasurer, he having removed from the State. Your Secretary has acted as Treasurer since that date. On account of this removal I was unable to obtain a list of the members who had paid, except those that had done so at Montpelier, until the first of August. As a result there was a delay of two or three months in sending out the Transactions.

I wish at this time to publicly thank the County Secretaries for their courtesy and promptness in sending in the list of members, officers and delegates from their respective societies.

With our Society organized as it is at present, with twelve auxiliary societies and a membership of about 350, it would seem as if we were starting forward to a new era of prosperity and that we should be better prepared than ever before to gain new knowledge to apply to the relief of suffering humanity.

Respectfully submitted,

GEO. H. GORHAM.

The chairman of the Board of License Censors, Henry Janes, presented their annual report and at his request was allowed to finish report on Friday.

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REPORT OF THE BOARD OF LICENSE CENSORS

FOR THE YEAR 1902.

Your Censors have the honor to report that their election being entirely unexpected, none of the members were aware that an examination of applicants for license had been appointed by the previous board, for the following Wednesday and Thursday, until a day or two before the time set. The interval being too short to call a meeting to make arrangements and draft a set of questions for the examination, those prepared for the old board were courteously placed at our disposal.

We wish here to acknowledge our obligation to the old board and particularly its president, Dr. Tinkham, without whose kindly aid in making arrangements for the first examination it would have been necessary to have postponed it, much to the inconvenience of the waiting applicants for license. In order to prevent a similar embarrassment to the next board and give its members several months in which to familiarize themselves with their duties and to prepare their questions, it was thought best to appoint the last examination of the year a few days before, instead of the week after, the annual meeting of the Medical Society.

Your board, well aware that there are already more physicians in Vermont than can get a comfortable living by the practice of their profession, a larger proportion to the population than in any other State or country, with two or three exceptions, believe that at present there is no call for more than enough to make good the losses by death and superan-

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nuation, and that this Society will not excuse much laxness in giving certificates for license; accordingly circulars of information and application blanks have been prepared, citing the statute and specifying the requirements which all applicants must satisfy alike.

It was assumed that the faculties of the different medical colleges represented would have pride enough for the reputation of their institutions to refuse diplomas to students lacking a decent preliminary education, or who were not considered well grounded in the medical sciences; therefore it seemed the chief duty of the Censors to satisfy themselves as to the applicant's ability to apply their scientific knowledge logically to the solution of the problems daily arising in the practice of the country physician, which unlike the city doctor, he must generally work out for himself, without the aid of an experienced specialist, for frequently prompt and decisive action must be taken in important and urgent cases occurring perhaps at night, in solitary habitations and with no opportunity for reference to books even.

In order that old practitioners might have equal chances with recent graduates, all questions were intended to be of practical, rather than merely academic interest, and had reference mainly to subjects liable to come up during the first months of practice and which must be decided promptly without a chance for consulting authorities. Care was taken to exclude matters in which there is much difference of opinion as to pathology and treatment. At each examination all applicants were furnished with the same sets of questions and their answers were marked by each examiner in turn. The different markings were afterwards averaged by the secretary of the board.

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Occasionally the papers of an applicant showed such ignorance of the elementary branches as to thoroughly discredit his "alma mater." Now we do not claim that a man cannot be a fair practitioner of medicine unless he is skilled in spelling, grammar and punctuation, but he must be greatly handicapped in the competition for practice in an intelligent community, for in the absence of strong proof to the contrary, it will be very justly assumed that one who in early life took no pains to train himself well in the preliminary branches of education, would not on arriving at maturity, be likely to apply himself to the study of medicine with the thoroughness necessary in order to master the science.

In these times of "strenuous life" nobody has the right to assume that another person is under the least obligation to waste valuable time in trying to decipher the illegible scrawl of a stranger, who by using a little more care could have made his meaning evident at a glance. It is positively criminal to give a prescription so illegibly written or so incorrectly abbreviated as to make a mistake by an educated druggist possible.

It may be well to consider the advisability of instructing the next Board of Censors to insert in their circular of information a paragraph in effect something like the following: In order to receive consideration from the Board of Censors the examination papers must be legibly written and free from such errors of spelling, grammar and reasoning as would show gross ignorance of the elementary branches of education.

If the present system is to be kept up, in order to give continuity to the policy of the boards, we would suggest that instead of making a complete change, but one member be dropped each year, his successor being elected for three years.

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We would also suggest the advisability of having the examination fees increased so as to correspond somewhat with those of other States, and it would be well to instruct the board as to the number of examinations to be given for a single fee.

We are unanimously of the opinion that, if the matter can be brought about, it will be much better to have a single State Board of Medical Examiners, made up of representatives from the several State medical societies, than to continue the three separate boards of censors as at present.

Of late some of the State boards of examiners have been agitating the subject of reciprocity, so that a physician who has passed his examination and received a license for his own State, may be eligible for a license in another State without being obliged to go through with another examination. Of course, if this is to be brought about, each State board must keep its standard high in order to have its certificates honored in another State.

Although reciprocity so far seems to have been left to the discretion of the different examining boards, it will be well to have an expression of opinion from this Society as to its desirability.

The gentlemen and lady named hereafter having passed satisfactory examinations before your Censors, are eligible for membership in this Society and are entitled to licenses for the practice of medicine and surgery in the State of Vermont:

NAMES.	RESIDENCES.
Aldrich, C. R.	Brattleboro, Vt.
Bingham, A. W.	Middlebury, Vt.
Brady, W. A.	Hartland, Vt.
Bugbee, L. H.	North Pomfret, Vt.

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Coburn, I. S.....Milton, Vt.
Clark, C. E.....West Brattleboro, Vt.
Dill, G. H.....Perkinsville, Vt.
Eddy, S. S.....Middlebury, Vt.
Fairbanks, Charlotte.....St. Johnsbury, Vt.
Gilbert, F. S.....Grafton, Vt.
Greene, R. A.....Bethel, Vt.
Harvey, R. J.....East Hardwick, Vt.
Hyatt, E. A.....St. Albans, Vt.
Jones, C. R.....Woodsville, N. H.
Lewis, F. C.....Burlington, Vt.
Massicotte, J. P. H.....Winooski, Vt.
Mollinelli, John .....Barre, Vt.
Murray, G. G.....Cuttingsville, Vt.
Newcomb, L. A.....Montpelier, Vt.
Phillips, C. W.....Arlington, Vt.
Prentiss, R. W.....Underhill, Vt.
Sprague, E. G.....East Brookfield, Vt.
Thabault, J. G.....Winooski, Vt.
Wasson, W. L.....Waterbury, Vt.
Wells, R. M.....Barton, Vt.
Welsh, J. L.....Proctor, Vt.

HENRY JANES, M. D.,
Chairman Board of Censors.

The report of the Committee of Arrangements was read by Dr. C. A. Pease and the same was accepted.

The report of the Delegate to Dartmouth Medical College, Dr. C. H. Burr of Montpelier, was read by the Secretary and the same was accepted.

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DELEGATES' REPORT.

Mr. President and Gentlemen:

On the 23d and 24th of February, 1902, fifteen men came before your delegates at Dartmouth Medical College, for examination for the degree of doctor of medicine. All passed a very creditable examination. The methods adopted for conducting the examination were the same as in former years.

This examination by the delegates is considered of great importance by the students and brings about sincere work in their preparation for the same.

The social part of our visit was gratifying in the extreme. As guests of Dartmouth Medical College we were treated very courteously, as well as by the New Hampshire delegates.

Your delegates wish to thank the members of the Vermont State Medical Society, for the honor of serving you in this capacity.

CLARENCE H. BURR.

Montpelier, Vt.

The chairman of the Committee on Necrology, Dr. M. H. Eddy, presented an obituary on Dr. L. D. Ross of Poultney, and also on Dr. Benjamin F. Sutton of Middlebury, which were read by the Secretary.

The obituary of Dr. E. S. Hooker was presented by Dr. Geo. S. Bidwell.

Adjourned.

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AFTERNOON SESSION.

Called to orler by the President at 2.15 o'clock.

Dr. H. L. Bartlett of Norway, Maine, anl Dr. A. G. Phipps of Gorham, N. H., were then introduced as delegates from the Maine Medical Association. In response, Dr. Bartlett spoke as follows:

Mr. President and Gentlemen of the Vermont Medical Society:

It affords me especial pleasure to be here to-day and extend to you the greetings of the Maine Society. I say especial pleasure, for it brings me back to the State of Vermont and to the City of Burlington, where I spent three years of my life attaining my medical education. I have never had the pleasure of visiting any section of the State since my graduation here in '91, therefore, I am anticipating much pleasure in meeting many of the men with whom I was acquainted at that time as well as others. Mr. President, I again wish to extend the greetings from our State.

Dr. Edward R. Clark presented a paper on "Some Therapeutic Considerations.

Dr. D. D. Grout then read a paper on "Sanitary Water Analysis and what can be Learned Therefrom," which was discussed by Drs. W. T. Slayton, E. R. Clark, G. F. B. Willard, H. D. Holton and C. W. Peck, Dr. Grout closing the discussion.

The Vice-President's annual address was then presented by Dr. M. F. McGuire, the subject being "Puerperal Septicemia." The discussion was opened by Dr. J. S. Hill who was followed by Drs. C. B. Doane, F. L. Osgood of Townshend, C. F. Camp, P. E. McSweeney, C. W. Bartlett,

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H. A. Crandall, C. W. Peck, J. M. Hamilton and J. B. Wheeler.

Dr. A. Lapthorn Smith of Montreal, not being present, his "Address on Gynecology" was read by Dr. H. C. Tinkham. Discussed by Drs. W. H. Vincent, H. D. Holton, D. D. Grout, C. M. Peck, J. B. Wheeler and H. C. Tinkham.

A paper on "Diphtheria with Special Reference to its Complications and Treatment," was then read by Dr. J. H. Blodgett.

On motion of Dr. Osgood, adjourned until the evening session.

EVENING SESSION.

Called to order at 8.15 o'clock.

Dr. Blodgett's paper on Diphtheria was discussed by Dr. S. S. Eddy.

Dr. H. Edwin Lewis then presented a paper on "The Early Diagnosis and Treatment of Pulmonary Tuberculosis."

The Vice-President, Dr. M. F. McGuire, then took the chair, and Dr. J. B. Wheeler presented the President's annual address, entitled "Modern Treatment of Prostatic Hypertrophy." Discussed by Dr. C. M. Bartlett.

Adjourned.

At ten o'clock the annual banquet took place at the Van Ness House, Dr. W. N. Bryant, Anniversary Chairman, about eighty-five being present.

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SECOND DAY.

FRIDAY, OCTOBER 10.

The Society was called to order by the President at 9.15 A. M.

The Report from the House of Delegates was presented by Dr. J. M. Hamilton, clerk, and on motion of Dr. J. M. Clarke, it was accepted and adopted.

REPORT OF HOUSE OF DELEGATES.

The delegates were called to order by Dr. D. C. Hawley, chairman of the reorganization committee, at 12 o'clock on Thursday, October 9th. Dr. Hawley elected temporary chairman, and Dr. J. M. Hamilton temporary clerk. Upon motion of Dr. Slayton of Lamoille County, Article II, Section 1 of By-Laws was amended by adding the following: "and forward the same to the Treasurer of the State Society on or before October 1st of each year."

Dr. Grout of Washington County, made the following motion which was seconded and carried: "The Treasurer of each County Society shall be required to pay into the treasury of the State Society on or before November 1st, 1902, one dollar for each active member."

Adjourned to 5.00 P. M.

J. M. HAMILTON, Acting Clerk.

At 5.00 P. M. the House of Delegates was called to order by the temporary chairman.

The following resolution was introduced by Dr. Bisbee of Washington County, seconded by Dr. Jenne, and adopted by the House of Delegates:

Resolved, That it is the sense of the House of Delegates that sections II and III of Article II of the new By-Laws

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adopted last year are not to be retroactive in their application, that they take effect from to-day and that any regular physician residing in Vermont, of good standing in the profession may become a member of his County Society and of this State Society on payment of annual dues.

It was moved, seconded and voted that the temporary organization be made permanent.

Moved by Dr. Osgood of Windham County, that we proceed to the election of officers by vote from the floor. Seconded by Dr. Peck. Motion lost by standing vote, 14 to 12.

Dr. Chisholm of Bennington County,moved the chair appoint a nominating committee to present a list of officers, said committee to report as soon as possible. Seconded and carried.

Dr. Hawley, the chairman, appointed the following nominating committee: Dr. Chisholm of Bennington County, Dr. Watkins of Chittenden County, Dr. Slayton of Lamoille County.

While the committee were out, Dr. J. S. Hill of Windham County, invited the society to hold their next annual meeting at Bellows Falls. Dr. Ellis of Rutland County, moved that the Society accept the invitation and hold the October, 1903, meeting at Bellows Falls. Seconded and so voted.

Dr. C. M. Peck of Rutland County, introduced the following, Article 17, of the By-Laws:

The House of Delegates shall report through its clerk its actions to the Society at the opening of each session, provided, the House of Delegates shall have held a session prior to that time and shall present through its clerk a report of all its actions to the Secretary of the Society, which

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report shall be a part of the records and be published in the Transactions.

Moved by Dr. Osgood of Windham County, that the first meeting of the House of Delegates be held at 5 o'clock, P. M., of the first day of the annual meeting of the Society and that it be so printed on the programme. Seconded and carried.

Moved by Dr. Peck of Rutland County, that the chairman and clerk of the present House of Delegates be made a committee to arrange a stated order of business for the House of Delegates for use at future meetings. Seconded and voted.

At this time some discussion arose as to the advisableness of certain physicians resident of one county becoming active members of the Society of another county, because of the geographical difficulties.

It was moved by Dr. Hamilton of Rutland County, that the matter be allowed to stand at least one year as now provided by the Constitution and By-Laws.

The Committee on Nominations now presented their report, but because of certain errors, it was returned for revision.

Adjourned.

J. M. HAMILTON, M. D., Clerk.

Meeting called to order by the Clerk, Dr. J. M. Hamilton, pursuant to adjournment.

Report of Nominating Committee read and adopted, and the clerk was ordered to cast a ballot for the nominees. The ballot was cast and the following officers elected:

President—E. M. Pond, Rutland.

Vice-President—Deane Richmonl, Windsor.

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Secretary—Geo. H. Gorham, Bellows Falls.

Treasurer—B. H. Stone, Burlington.

Executive Committee—E. M. Pond, Rutland; Geo. H. Gorham, Bellows Falls; J. B. Wheeler, Burlington.

Publication Committee—Geo. H. Gorham, Bellows Falls; G. P. Anderson, Brattleboro; E. R. Campbell, Bellows Falls.

Necrology Committee—M. H. Eddy, Middlebury; C. S. Scofield, Richford; E. H. Martin, Middlebury.

Legislation Committee—W. N. Platt, Shoreham; M. F. McGuire, Montpelier; H. C. Tinkham, Burlington.

License Censors—Henry Janes, Waterbury; W. H. Vincent, Orwell; S. W. Hammond, Rutland.

Anniversary Chairman—C. W. Peck, Brandon.

DELEGATES,

Medical Department of U. V. M—L. A. Russalow, Randolph; W. N. Platt, Shoreham.

Dartmouth Medical College—George S. Bidwell, Waterbury; M. L. Chandler, Barre.

Maine Medical Association—T. F. Gartland, White River Junction; J. H. Blodgett, Saxton's River.

Massachusetts Medical Society—C. S. Hodgkins, Castleton; W. W. Berry, Waterbury.

Rhode Island Medical Society—W. D. Huntington, Rochester; L. M. Greene, Bethel.

New Hampshire Medical Society—J. E. Hartshorn, St. Johnsbury; J. M. Hamilton, Rutland.

New York State Medical Association—A. B. Bisbee, Montpelier; J. N. Jenne, St. Albans.

New York Northern—E. H. Ross, St. Johnsbury, F. C. Liddle, Dorset.

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White River Medical Association—C. A. Cramton, St. Johnsbury; J. S. Hill, Bellows Falls.

Connecticut River Valley Association—C. W. Bartlett, North Bennington; F. C. Phelps, Vergennes.

Adjourned subject during the present meeting to the call of the clerk of the House of Delegates.

DELEGATES PRESENT.

Addison County—

Bennington County—E. B. Daley, A. S. M. Chisholm, L. B. Newton.

Caledonia County—C. A. Cramton.

Chittenden County—H. R. Watkins, M. C. Twitchell, D. C. Hawley, P. E. McSweeney.

Franklin County—J. N. Jenne, E. M. Brown, C. S. Scofield (Alt.), E. J. Melville (Alt.)

Lamoille County—W. T. Slayton.

Orange County—A. C. Bailey.

Orleans County—F. S. Gray, E. M. Nichols.

Rutland County—C. W. Peck, C. L. Hodgkins, E. D. Ellis, H. L. Manchester, S. W. Hammond (resigned), W. W. Townsend (Alt.), J. M. Hamilton (Alt.)

Washington County—A. B. Bisbee, D. D. Grout.

Windham County—H. B. Holton, F. L. Osgood (Townshend), J. S. Hill (Alt.)

Windsor County—W. N. Bryant, C. B. Doane, W. L. Havens (Alt.)

Total attendance—31.

JAS. M. HAMILTON, Clerk.

Dr. E. J. Melville of Bakersfield read a paper on "Should the State care for the consumptive?" Discussion opened by Dr. W. N. Platt and closed by Dr. Melville.

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Dr. G. C. Berkley of St. Albans gave a paper on "Abscess of the brain in the tempero sphenoidal lobe, with a report of two cases operated upon." It was exhaustively discussed by Dr. Twitchell of Burlington, Dr. Berkley closing the discussion.

Dr. H. C. Gordinier of Troy, N. Y., read a paper entitled "Adiposis dolorosa."

On motion of Dr. A. B. Bisbee a vote of thanks of the Society was extended to Dr. Gordinier for his valuable and instructive paper and he was unanimously elected an honorary member of the Society. Dr. Gordinier very gracefully accepted the honor.

Dr. M. J. Wiltse of Burlington read a paper on "Medico-Legal Autopsies." Discussion opened by Dr. A. B. Bisbee, followed by Drs. Newton and Berry. Closed by Dr. Wiltse.

Dr. J. W. Jackson of Barre presented a paper entitled "Cerebral Apoplexy; its causes and treatment." Discussed by Dr. W. W. Berry of Waterbury.

Dr. S. W. Hammond of Rutland finished the report of the Board of Censors and the same was accepted.

Adjourned.

The Society was called to order by the President at 2.15 P. M. Dr. W. W. Townsend of Rutland read a paper on "Chronic Anterior Urethritis." Discussed by Drs. C. B. Doane and J. B. Wheeler.

Dr. C. S. Caverly of Rutland presented a valuable paper on "Some observations on the diagnosis of small pox." Discussed by Drs. Grout, McSweeney, Clark and Watkins. Closed by Dr. Caverly.

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Dr. A. J. Willard of Burlington read a paper on "Forty Years with the Neuroses." Discussed by Drs. E. R. Clark and A. J. Willard.

The following physicians were in attendance:

J. B. Wheeler, Burlington.	W. E. Lazell, Barre.
D. C. Hawley, Burlington.	L. A. Russalow, Randolph.
C. A. Pease, Burlington.	A. C. Bailey, Randolph.
P. E. McSweeney, Burlington	C. W. Peck, Brandon.
H. R. Watkins, Burlington.	E. R. Clark, Castleton.
J. M. Clarke, Burlington	C. S. Hodgkins, Castleton.
M. C. Twitchell, Burlington.	M. H. Eddy, Middlebury.
H. A. Crandall, Burlington.	S. S. Eddy, Middlebury.
H. E. Lewis, Burlington.	S. G. Start, Cambridge.
F. E. Clark, Burlington.	W. T. Slayton, Hyde Park.
P. H. McMahon, Burlington.	W. H. Vincent, Orwell.
F. C. Lewis, Burlington.	C. W. Milliken, Copperfield.
M. J. Wiltse, Burlington.	E. M. Brown, Sheldon.
B. H. Stone, Burlington.	W. N. Platt, Shoreham.
A. P. Grinnell, Burlington.	Mary M. Platt, Shoreham.
Anna E. Barker, Burlington.	E. D. Ellis, Poultney.
A. J. Radike, Burlington.	C. B. Doane, Springfield.
A. J. Willard, Burlington.	W. L. Havens, Chester Depot
Lyman Allen, Burlington.	J. A. Stevenson, Chester.
H. C. Tinkham, Burlington.	F. C. Liddle, Dorset.
W. B. Lund, Burlington.	F. L. Osgood, Townshend.
W. G. Church, Burlington.	W. N. Bryant, Ludlow.
H. L. Wilder, Burlington.	W. D. Huntington, Rochester.
C. H. Beecher, Burlington.	F. R. Stoddard, Shelburne.
C. K. Johnson, Burlington.	L. H. Hemenway, Manchester
F. W. Baylies, Burlington.	C. A. Cramton, St. Johnsbury.
J. M. Hamilton, Rutland.	M. C. Russell, Newbury.
S. W. Hammond, Rutland.	H. C. Jackson, Norwich.

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W. W. Townsend, Rutland.
C. S. Caverly, Rutland.
C. W. Strobell, Rutland.
J. D. Hanrahan, Rutland.
A. B. Bisbee, Montpelier.
M. F. McGuire, Montpelier.
L. B. Newton, N. Bennington
C. W. Bartlett, N. Bennington
A.S.M.Chisholm,Bennington.
E. B. Daley, Bennington.
J. N. Jenne, St. Albans.
G. C. Berkley, St. Albans.
J. S. Hill, Bellows Falls.
A. L. Miner, Bellows Falls.
F.H.O'Connor,Bellows Falls.
E. S. Albee, Bellows Falls.
G. H. Gorham, Bellows Falls.
H. D. Holton, Brattleboro.
J. K. Conland, Brattleboro.
S. W. Lawton, Brattleboro.
Henry Janes, Waterbury.
W. W. Berry, Waterbury.
G. S. Bidwell, Waterbury.
D. D. Grout, Waterbury.
J. W. Jackson, Barre.
C. F. Camp, Barre.
B. D. Colby, Sudbury.
V. M. Rogers, Quechee.
G. L. T. Hayes, Graniteville.
H. L. Manchester, Pawlet.
E. M. Nichols, Barton.
C. S. Scofield, Richford.
L. C. Holcomb, Milton.
F. W. Sears, Grand Isle.
H. V. Hubbard, Barnard.
F. S. Gray, Troy.
A. L. Bingham, Williston.
E. J. Melville, Bakersfield.
A. S. C. Hill, Winooski.
G. F. B. Willard, Vergennes.
E. B. Watson, Williamstown.
Henry H. Seely, Richmond.
H. C. Gordinier, Troy, N. Y.
G. M. Sabin, Malone, N. Y.
H. P. Stearns, Hartford, Ct.
E. K. Loveland,
Watertown, Conn.
H. L. Bartlett,
Norway, Me., delegate.
A. G. Phipps,
Gorham, N. H., delegate.

Total attendance—104.

At 4.15, on motion of Dr. W. H. Vincent, adjourned.

(Signed) GEO. H. GORHAM, Secretary.

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PRESIDENT'S ANNUAL ADDRESS.

Modern Treatment of Prostatic Hypertrophy.

By John B. Wheeler, M. D., Burlington.

It is only very recently that surgeons have undertaken the task of relieving, by operative interference, the misery of that large and unfortunate class of patients who suffer from enlargement of the prostate.

When men now middle-aged were beginning practice, the treatment of prostatic hypertrophy was wholly palliative. No attempt was made to remove the obstruction by any sort of operation on the prostate. The fact that such operations are, in themselves, serious and that the subjects for them are men in the decline of life who often are sufferers from renal, cardiac and arterial disease, has made surgeons reluctant to attempt them. Hence, although the first cauterization of the prostate was done by Bottini, of Italy, in 1872, and the first prostatectomy by Belfield of Chicago in 1885, and although Watson of Boston, in 1888, clearly pointed out in an elaborate and masterly monograph the indications for the different methods of operating on the prostate, and McGill of Leeds, in the same year, published a series of prostatectomies, it is only within the last few years that these operations have been generally performed. But now that daily increasing experience is showing that operative treatment brings great relief and often perfect cure to a large majority of patients and that in properly selected cases the mortality is not unduly large,

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operations upon the hypertrophied prostate are performed frequently and with very satisfactory results.

But this striking innovation has not done away with palliative measures, since in some cases operation is contra-indicted, in others it is refused and even in operative cases careful preparation for the operation is desirable. A clear understanding of the danger of infecting the bladder has made modern palliation quite a different thing from that of thirty years ago. If no cystitis exists and the only trouble is the obstruction to the flow of urine, the occurrence of cystitis is guarded against by careful sterilization of the catheter and its lubricant and by disinfection of the meatus and glans before the catheter is used. If the urine is strongly acid, alkalies and diuretics are given. If a cystitis exists and especially if the urine is foul and ammoniacal, the bladder is irrigated with boracic acid solution and urotropin is given internally. Hot water or hot salt solutions are injected daily into the rectum in order to quiet irritability, diminish congestion and reduce the size of the prostate. A soft catheter, of course, is used to draw the urine.

To turn now to the subject of operative treatment. The operations whose object is to reduce the size of the prostate without actually attacking the organ itself, have not proved wholly successful. The best known of them is castration, first proposed for this purpose by J. W. White of Philadelphia. The great relief which was afforded by this procedure in some of the earliest reported cases, caused it to be employed with much enthusiasm. A more extended trial, however, showed that its mortality was nearly, if not quite as great as that of prostatectomy; that it was often disappointing as acurative measure and that it was sometimes followed by mental derangement. Add to these drawbacks the reluc-

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tance of many patients to undergo that particular form of mutilation and it is easy to see why castration is rarely done nowadays for the relief of prostatic hypertrophy. Resection of the vas deferens has been proposed as a substitute for castration, with the idea of obtaining the same results by an operation which is less dangerous and to which the patient would more readily consent. Vasectomy, however, has about the same mortality as castration, and gives even less satisfactory results, so that it has fallen into disuse. Ligation of the internal iliac arteries has been done, with the idea of causing a shrinkage of the prostate by depriving it of its blood-supply, but the benefits of this operation are by no means commensurate with its seriousness and it has never been regarded with general favor.

The operations from which the best results are obtained are those which are done upon the prostate itself and these are practically the only ones which are performed at present. They are cauterization of the prostate (Bottini's operation) and removal of the prostate (prostatectomy). A brief description of these proceedings may not be out of place.

Bottini's operation, which bears the name of the Italian surgeon who invented it, consists in burning furrows through the hypertrophied prostate by means of an instrument shaped like a small lithotrite, which is introduced into the bladder through the urethra. The beak of the instrument is then turned downward and guided to its proper position behind the prostate by the surgeon's finger in the rectum, the male blade is heated by a galvanic current and by withdrawing it to the proper distance, a furrow is burned through the prostate. The operation is completed by repeating this proceeding several times with the beak turned in a different direction each time. Thus a number of channels are burned through

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the prostate through which urine can escape, and it is claimed that subsequent cicatrization shrivels and contracts the organ to such an extent that it no longer offers serious obstruction to the passage of urine.

Prostatectomy may be either supra-pubic or perineal, according to the route by which the prostate is approached. In the supra-pubic operation the bladder is opened just above the pubes, in the prevesical space, the exact condition of the interior ascertained by inspection and touch, the mucous membrane over the prostate incised and the prostate peeled out by the finger introduced through the incision, a manoeuvre, sometimes very easy, sometimes quite difficult and generally attended with free hemorrhage. Sometimes the gland cannot readily be separated from its capsule and has to be morcellated with forceps. The bladder is subsequently drained from above by a large rubber tube introduced through the supra-pubic wound and from below either by a catheter passed per urethram and fastened into place, or by another large tube introduced into the bladder by an opening made through the perineum. Perineal prostatectomy is performed through a perineal incision, either transverse or longitudinal, but as large as possible, in order to give a good view of the prostate. After the prostate is reached, its capsule is opened, the gland is drawn down by hooks or volsella forceps and is enucleated by the finger. Drainage is provided by a rubber tube fastened into the wound.

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The comparative merits of these methods of operating are still under discussion. Against Bottini's operation it is urged that it requires a large outlay in the way of battery and special cauterizing instruments, as well as special experience in the use of those instruments and that the surgeon cannot tell just what he is doing and is liable to harm the bladder

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wall and even perforate the rectum with his cautery. This has happened at least once. Nor can he recognize other pathological conditions existing in the bladder. In some cases, too, it is impossible to get the instrument into the bladder. On the other hand, it is a more rapid operation than prostatectomy and can be done under local anesthesia, two important points where the patients are feeble old men whose hearts and kidneys are more or less diseased. It also avoids the annoyance and discomfort of an external wound, except in some cases where perineal drainage is necessary.

Prostatectomy, by either route, has the advantage of permitting a thorough examination of the bladder and of radically removing the obstructing mass. Ulcers can be treated, calculi and new growths removed and the prostate, of course, is eliminated. The disadvantages of the operation are that it requires a general anesthetic, that it takes a longer time than the Bottini and that there is more liability to hemorrhage. The hemorrhage in prostatectomy, however, is easily controlled, but when it follows Bottini's operation, as it occasionally does, a cystotomy has to be done in addition to the original operation.

When the results of Bottini's operation are compared with those of prostatectomy, we find quite a difference of opinion among the best authorities. This is perhaps due partially to the fact that only a short time has elapsed since operations upon the prostate have been generally performed, so that opinion has hardly had a chance to take definite form, and partly to another fact, namely, that in many cases operations seem to have been performed in an indiscriminate way, without regard to the indications afforded by the cases in hand. But whatever the explanation is, the difference of opinion is marked. Bangs, for instance, claims a perfect

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cure in only 60 per cent. of his cases of Bottini's operation, while Guiteras, after collecting 753 reported cases, finds a similar result in 82.5 per cent. In a series of 152 prostatectomies, Guiteras found perfect cure reported in 72.5 per cent. while Watson claims "complete restoration of the bladder functions" in 85 per cent. of his cases. Watson puts the mortality of prostatectomy at not much less than 8 per cent., Fuller puts it at from 5 to 8 per cent in properly selected cases, while Guiteras' series gives a mortality of 16.4 percent. Other statistics offer, in some instances, still more confusing discrepancies. Nevertheless, enough light can be reached to show the way towards certain conclusions which may, or may not, present a different appearance as the light grows stronger.

The mortality from Bottini's operation is certainly less than that from prostatectomy. Few operators have been able to obtain a mortality of less than 8 per cent. for their prostatectomies, while Bottini's operation is generally credited with a mortality of from 5 to 6 per cent. On the other hand, the results of Bottini's operation are less satisfactory, apart from the mortality rate, than those of prostatectomy. The percentage of complete cures is smaller, and in many cases the operation has to be repeated. This is what might naturally be expected. If the prostatic obstruction is simply a bar across the urethra, a deep furrow burned through it would be likely to give complete relief. But when the obstruction is caused by hypertrophy of the lateral lobes, which occlude the urethra just as a pair of greatly hypertrophied tonsils occlude the pharynx, it is easy to see why the burning of furrows would give less relief than in the other case and would be far less efficacious than the complete removal of the obstructing masses.

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These considerations serve as guides in the choice of an operation for a given case. If the obstruction is nothing but the bar above referred to, Bottini's operation may be employed with good hope of satisfactory results. If the patient is very old and feeble or has organic disease elsewhere, Bottini's operation, if any, should be performed because it can be done under local anesthesia and in shorter time and with less shock than prostatectomy. But if the patient's age is not greatly advanced and his heart and kidneys are not seriously diseased, he is a good subject for prostatectomy and if there is a general enlargement of the prostate, this operation offers him a better chance of complete cure than the Bottini does. If these considerations had occurred to all the operators who have reported cases, it is probable that the published statistics would be less confusing.

If prostatectomy is decided upon, the choice between the supra-pubic and perineal methods remains to be made. The advantages of the supra-pubic method are, that the operator can see what he is doing and can easily reach the middle lobe of the prostate. Its disadvantages are, that it is inapplicable in a small contracted bladder, that it wounds the fundus as well as the base of the bladder,while the wound at the base is worse than that inflicted in a perineal prostatectomy, and that in order to secure proper drainage, a catheter must be fastened into the urethra or an opening made through the perineum. Perineal prostatectomy, of course, gives no chance to look into the bladder, and the middle lobe of the prostate is often at an inconvenient distance from the perineum. But it wounds the base of the bladder less than the supra-pubic operation does, and does not wound the fundus at all, ample drainage is provided by the operative incision and the size of the bladder makes no difference. Hemorrhage, also, is less

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profuse and easier to check than in the supra-pubic operation, while the difficulty in reaching the middle lobe of a very large prostate can be overcome by drawing the prostate down with hooks or retractors. With the technique of to-day, the mortality of the two methods is about the same. To a large extent, the choice is a matter of personal preference, each operator choosing the method with which he is most familiar and in the results of which he has the most confidence. But there is a general agreement that the supra-pubic operation is best adapted to cases where the bladder is large and the hypertrophied prostate projects high up into the bladder, while the perineal is preferable where the bladder is small and contracted and the hypertrophy is mainly in the direction of the rectum.

The contra-indications to operation are the same which obtain in reference to other operations, namely, well-marked disease of the heart, arteries or kidneys. When these structures are badly diseased, operative interference is likely to result in speedy death. As Bottini's operation can be done under local anesthesia, this statement does not apply to it so forcibly as to prostatectomy, which subjects the diseased organs to the shock of a general anesthetic. Age, in itself, is not a contra-indication to prostatic operations. Many successful prostatectomies are reported in men over eighty years of age, who had no disease of the circulatory system and whose kidneys were sound. Although cystitis increases the danger of sepsis, it is an indication for, rather than a contra-indication to operation, since operation cures it by draining the bladder.

While good authorities differ as to the best method of operating on the hypertrophied prostate, all agree that operative treatment will result in complete cure of a large majority

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(70 to 85 per cent) of cases and that the dangers of operation do not justify the apprehension with which it is generally regarded. Of course, it is not likely that a very low mortality can ever be obtained. So many prostatics have organic disease in addition to the weakness of age and so many of them, either from their own timidity or by the advice of their physicians, refuse operation until their condition has become desperate, that any considerable number of operations upon the prostate must show a very appreciable mortality. This, as has already been stated, has been brought down to about 8 per cent. by improved technique and will be still further reduced when the importance of operating early, before the bladder and kidneys have become seriously affected, is thoroughly appreciated. The risk of operating in a clean, normal-sized bladder, with the kidneys in good condition, is not great. If matters have been allowed to go on until a long-standing purulent cystitis has contracted the bladder and converted it practically into an abscess cavity and the kidneys have undergone secondary changes, the patient is likely to die of sepsis from his infected bladder or of uremia from his diseased kidneys. If he escapes these dangers, his contracted bladder, which can never hold the normal amount of urine, will render a perfect cure of all his symptoms impossible. The time to operate for prostatic hypertrophy is well stated by Thorndike to be just as soon as palliative treatment, properly carried out, fails to relieve the symptoms. If operation is reserved as a last resort, it becomes, like all other "last resort" operations, a desperate and dangerous measure. Surgery has always suffered from the tendency to make it a last resort, and this is at least as true of prostatic operations as of any other surgical procedures. When done early, the prospect of cure is good and the risk to life not great; not to be

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weighed against the lingering misery with which the life of a patient with prostatic cystitis drags to its wretched close.

DISCUSSION.

Dr. C. W. Bartlett.

This seems a too important paper to let go by without something being said. I would like to speak of a few of the difficulties that I imagine might exist in performing the Bottini operation. A case came under my notice in July last. After exploring the bladder, which had a capacity of about two hundred and fifty c. c.'s, and upon further examination, I found a large bar across the urethra as well as hypertrophy of the lateral lobes. Whether the kidneys were involved, I was unable to determine. After looking the matter up somewhat, I thought this was perhaps a suitable case for the Bottini operation and I procured one of Frosenburgh's instruments for the same. After experimenting with it, I reached the conclusion that I did not want to use it. In the first place when the galvanic current requisite to heat the blade to a white heat is on, I found the handle and contact screw too hot to handle, let alone guide to its proper position. After I studied the technique, I thought I would experiment a little farther with the instrument. I had no cadaver upon which to work but I took a piece of fat pork. I found that the beak might be bent and it seems to me that one might turn it where they did not want it to go. Is it going to be possible to make the incision just the length you want? How are we going to tell where the instrument is when we are going ahead? Wouldn't we have to rely somewhat upon our judgment?

Closing of Discussion by Dr. J. B. Wheeler.

In regard to the results of the operation, I do not understand that the benefits from the operation come wholly

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from the mere cut that is made but from the effect of the burning. Where the burn extends for about one-half inch in all directions, you will find in about three weeks after the operation, that this shrivels up quite a bit. It seems to me that the instrument in the hands of a person who has had thorough training and is thoroughly familiar with the bladder, that it must be of great value. It is a question in my mind whether this instrument should be used by a man who has not had a great deal of experience. For example J. W. White's method of castration was recommended because anybody could do it. It was taken up and everyone did use it. After a while it was found that ninety or more per cent. did not receive any benefit and there was a considerable mortality. Recently I saw an article regarding this matter of bending the beak of the instrument. The beak was turned down and guided behind the prostate by employing one finger in the rectum but it has failed a great many times to cut the hypertrophied prostate where desired. It has sometimes only taken a small slice off from a large prostate.

I was very glad to hear Dr. Bartlett's discussion and to learn that he had done some work with the Bohemian instrument. With regard to Bottini's operation, I have had no experience with it myself. The objections seem so evident that I do not think it would be worth while when there are such operations as prostatectomy. The Bottini operation, undoubtedly has its place and there is a certain class of patients to which it is adapted. Those were mentioned in the paper and there are a certain class of operators who are best adapted to it, those who are familiar with the various uses of electricity. When you stop to think you can see how difficult it would be to use it when one was not

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familiar with the instrument. You operate upon an extremely delicate part of the anatomy. You can not see whether it is white hot or not, or where it is cutting, etc. The experience which Dr. Bartlett speaks of, the bending of the blade, has occurred in the practice of some surgeons of wide experience. Dr. ———, the best surgeon on the continent, cut through the prostate and then went to draw the instrument out but it would not come and he found the blade had bent back and he had cut a slit the urethra's entire length. It does not seem that for the average case or average man, it is quite the proper thing. The statistics are greatly improving. As we come to do these operations earlier, before the disease has progressed too far, the mortality is being brought down lower.

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VICE-PRESIDENT'S ADDRESS.

Puerperal Septicaemia.

By M. F. McGuire, M. D., Montpelier.

Notwithstanding that there is probably no other branch of medical science which has furnished us with such a wealth of literature, within the past few years, as that of obstetrics, of which my subject to-day forms an important part, I will attempt to enter into some discussion upon it, doing so, however, with misgivings, as my views may be of little value compared with that of learned authorities.

PUERPERAL SEPTICAEMIA-CHILDBED FEVER.

Puerperal Fever is a fever beginning usually within the first five days after labor, attended with septic infection of the woman's blood and with acute inflammation of one or more of the reproductive organs.

History.—The first light thrown upon the subject of puerperal septicæmia was kindled by Ignatius P. Semelweise, a young Hungarian, who had charge of the lying-in department of the Vienna General Hospital over half a century ago and whose mortality had reached the enormous figures of 10 per cent. Astounded at such a fatality, he sought to ascertain the probable cause, when what at first seemed obscure, soon became transparent by the death of one of his assistants as the consequence of a wound which he received in the dissecting room, followed by symptoms identical to those of the fatal cases in lying-in wards. From

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this time forth Semelweise insisted on a thorough cleansing of the hands with soap and water and then holding for some time in chlorine water or a solution of chloridated lime, and as a further precaution also restricting the number of examinations, thereby greatly reducing the mortality. Yet, notwithstanding the indisputable evidence his theory was not accepted by his colleagues, and I believe he died before the merits of his discovery were appreciated. As it was, he deservedly won for his memory the distinction of being called "The Father of Antiseptic Midwifery."

Etiology.—In the changed condition of the blood in which the quality is altered, as in plethora and anaemia, we find an increased susceptibility to inflammation. The dilatation of the blood and lymph vessels of the pelvis, by predisposing or favoring the formation of thrombi, which may become fertile soil for pathogenic organism.

Then we have the supersensitive condition of the nervous system, the highly emotional state of the parturient, the increased susceptibility to worry and excitement which all tend to lower the vitality and resisting powers of the woman. Then after labor the woman is exhausted and has lost more or less blood, with probably slow and irregular contractions of the uterus which, instead of closing the uterine vessels by agglutination preventing the formation of clots, we have the open spaces in which to form a medium for the growth and development of bacteria. We may have more or less traumatism produced by labor all through the parturient canal, especially laceration on the inner surface of the perineum, while on the outer surface it remains intact, forming as it does a pocket in which we have an accumulation of pus from which we may get rapid absorption.

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A small piece of placenta or membrane, which soon swarms with saprophtitis, may have been left behind in utero, or even lochia which fails to drain properly, makes a good culture medium.

The streptococci pyogunes, as found in all fatal cases, is the usual cause. Lawson Tait lays considerable stress upon gonococus, and Kronig reports a number of cases, all of which were mild and recovered without treatment.

Atmospheric infection as a cause is held by some writers. It is a comforting belief, as it casts the responsibility on nature, but it is not a tenable one. Of course, the whole question is one of wound infection. Given a woman delivered in an asceptic manner and cared for similarly afterward, and she may lie in a room infected with any of the infectious diseases and the puerperum may be unaffected so far as septicæmia is concerned. She may develop the disease and it will run its proper course, only modifying the puerperal state in so far as to arrest involution. If she die, the lesion peculiar to the intercurrent disease will be found with arrest of involution, and we may find nothing of septicaemia. On the other hand should any of the virus of these diseases come in contact with the wounded genital, septicæmia will follow and we may, or may not, have the development of the disease from which it was taken.

When we remember the vascular supply of the sexual system is increased manifold during pregnancy, and when we recall the rich lymphatic supply to the same system, it is not surprising that infection starting in this locality should spread to the various serious cavities and be deposited in the various organs in the body. Hence it is that puerperal septicæmia is always serious, although much can be done by proper treatment to save life, yet these patients are left in

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the most exhausted condition and require more tonic treatment and longer time in which to recover than any acute infectious disease. Danger increases with the degree of septic infection; when the poison is extremely virulent death may occur within 24 hours, even without recognizable post mortem evidence. Cases of less severity may continue five or six days, when convalescence usually begins. Among the worst cases are those involving the veins, lymphatics and peritoneum.

Symptoms.—Clinically puerperal septicæmia offers a varying symptomology, according as the infection affects chiefly one or another of the pelvic organs,and as to whether the infection is detected early and treated promptly. It seems best not to try to differentiate a symptomology of one organ from another, for very rarely will one organ be affected without the consecutive affection of another. Again the symptoms of infection of the system at large predominate over the signs affected by the local lesion.

As a rule it is about 36 hours after delivery that the first symptoms of septic infections manifest themselves. A chill is by no means a precursory symptom except in the so-called fuiminating types, when a woman seems to pass from health to death. It has been my experience that although a woman may have no chill the majority complain of a creepy sensation up and down the spine, which, if the disease continues, soon becomes frigid, the occurrence of which always awakens suspicion of impending danger. The pulse rate affords, as a rule, most valuable evidence of alteration in the smooth course of the puerpera. A slow pulse is incompatible with sepsis in its early stage—a rapid pulse a danger signal. When the pulse increases in frequency and the temperature rises to 99 or 100 degrees about the third day, im-

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pending mischief of a septic nature may usually be suspected. To-day the so-called milk fever is not recognized. Acute constipation may cause it but a laxative should clear the doubt. If it does not and no intercurrent disease is developing, sepsis is. At once a careful examination is called for. I usually make a general physical examination. If the pelvic floor has been lacerated, sloughing in this locality may be found. If not, the cervix should next be examined with a speculum, for lacerations and sloughs, and at times a fragment of membrane or placenta may be found protruding. These failing to show cause, the uterus must be carefully examined, thus proceeding at an early date to establish the source of infection while it is probably amenable to local treatment, at any rate before general infection has progressed to a great degree.

Probably in the vast majority of cases septicæmia emanates from the uterus. Either its lymphatics have absorbed the septic virus directly or else a decomposing mass is lying in its cavity and is being infected. As a rule the relation between the pulse and temperature in the puerperal state is of exceeding value from a prognostic as well as a diagnostic standpoint.

Acute septic conditions, where the system is surcharged as it were with the poison, are associated with a rapid pulse and a very low temperature. The system is shocked by the poison and we have a condition of collapse with a gloomy prognosis. On the other hand, where the lesion is more acute, inflammatory and systematic infection slight, we are apt to have a high temperature and slow pulse. Associated with rapid pulse and high temperature, the lochial discharge becomes altered, it may be partly or altogether arrested and

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it may become fetid. Odor to the lochia is simply a sign of decomposition and it is an accompaniment of sepremia, and the most common cause of which is a portion of placenta, mebrane, clot or retained lochia in the uterine cavity.

In this connection then it is to be remembered that the most acute types of sepsis may be unassociated with odor. Whilst on the early recognition of odor and on its prompt treatment sepremia may be abated before it merges into septicæmia.

In early sepsis pain is usually absent, as a rule it becomes marked as the peritoneum becomes involved. Of course, pressure over the uterus at any time will cause pain. As systemic infection develops and the various organs become affected, pain emanates from each in turn. Thus we may have complicating sepsis, pleurisy with as sharp a pain over the affected lung as though unassociated with septic infection. The pain associated with exudate in the pelvis is sharp, and as I have observed, spasmodic in character and radiating. When the systemic infection is deep and associated with peritonitis of a purulent type, pain may be absent altogether, or in rupture of an accumulation of pus into the peritoneum cavity pain may for a time disappear.

The intestinal tract sympathizes markedly with this systemic septic phenomena, constipation may result from peritonitis when absolute paresis of the intestine frequently ensues, and as a result we have tympanitis with consequent pain in the abdomen and interference with the respiration from pressure on the diaphragm. As the peritonitis becomes more severe the intestinal coils cannot move, as they are firmly bound together by bands of lymph or adhesion. Exceptionally we do get a diarrhea. The stomach also sympathizes in the trouble and is shown by the coated tongue,

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nausea and vomiting, with a sweetish odor to the breath. The skin assumes a characteristic sallow hue and the woman sinks into a typhoid condition.

Diagnosis.—Since this condition is one of fever producing toxemia, the symptoms may be readily confused with other serious febrile conditions. The analogy between septicæmia and typhoid fever is more striking (so much so that I sent two specimens of blood to the laboratory for examination which gave me no support in my error), both diseases presenting the common symptoms of a septic infection. They are both likely to be characterized by abdominal symptoms, also of nervous exhaustion, chief of which is delirium. In both conditions the spleen may be enlarged, also in some cases diarrhoea is present. The points which tend to remove doubt are: First, the history of the disease, the slowly developing prodromial stage, the presence of rose spots and the widal reaction. The facial expression in typhoid fever is dull, while in that of septicæmia it is anxious and excited.

Pneumonia is not an uncommon condition in the puerperium, and yet its manifestations are not those distinctly of the bronchial involvement, as the symptoms in the beginning of the disease are rather due to the severity of the infection than to the catarrhal process. In differentiating symptoms common to pneumonia and septicæmia the character of the sputum and the early localization of pain are important points.

As we are not troubled with malaria in this region I will not go into the differential diagnosis of the disease. A good deal is written on a bacteriological examination of specimens taken under asceptic precaution from the interior

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of the uterus, but which I think impractical to the ordinary practitioner.

Treatment.—Of course, the first thing to consider is the preventive treatment. I try to observe all the antiseptic precaution necessary at the time of labor, and advise the subsequent care to be the same, and I also advise untrained nurses to place all the material used about the pelvis and perineum in the oven for twenty minutes, or until they become brown, when I feel sure they are then sterilized, and to then bring them directly to the patient. All these directions are given in the presence of the patient, and advised of their necessity to prevent blood poisoning, which *she* will then surely remember.

I advise bathing the perineum with 1-5000 Bi. Chlo. Sol. twice daily, or oftener if necessary.

Notwithstanding that all care and antiseptic precautions have been observed, cases will occasionally spring up which give alarming symptoms, and so much depends upon prompt action (as we well realize the rapidity with which micro-organicisms multiply under such favorable environments). I usually, after excluding other causes, inspect the vagina and cervix, washing same in a 1 per cent. carbolic solution, and failing to find cause I continue to the uterus, which I examine with my finger, removing any foreign substance, if found present, with a curette or fenestrated sponge forceps, then following by introducing the uterine irrigator, which, if lochia has been retained, will allow to escape through the canella and which proves one cause for the disturbance. I then continue the intra uterine irrigation with 1 per cent. carbolic solution, followed by a quart of sterilized water, which I repeat in 12 hours if the temperature remains elevated. If I find the uterus is not draining properly

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I introduce, through a gauze packer, which I believe a very valuable instrument, as it prevents the gauze coming in contact with anything which may not be sterilized, an important thing in many of the inconvenient bed rooms in which everything looks, as well as the patient, to be germ-laden. For the relief of temperature and restlessness I advise bathing every two hours.

As it is so important to support the bodily strength, I advise a nutritious liquid diet given every four hours and also give *Anemon* Chlor. 5 gr. in one-half tumbler of water every four hours, as it maintains the tongue in a clean condition, producing a greater relish for nourishment, accelerates the action of the kidneys and supports the system.

As convalescence advances I advise Elix. Gentian and Tr. F. Cl. Z. T. t. i. d. with a wineglass of malt every four hours. If after a time the exhaustion and anaemia continue I advise a tablet composed of:

R. Blauds Mass.....Gr. ¼
Ac. ....Gr. 1-50
Ext. Nux. Vom. .....Gr. ⅛
Cascara ....Gr. 1
One t. i. d.

I have never tried the serum or continuous irrigation advised by some writers.

In closing I must say that I sometimes think that perhaps some of the cases, in which I have resorted to early radical treatment, might have recovered without such measures, but when I realize the preciousness of a woman's life, when the word *mother* has its fullest significance, and as delays are dangerous, the fear that the helpless offspring, and perhaps many other dependent ones, may lose their

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counselor, I feel that I did the right thing, for as the saying is:

"The hand that rocks the cradle rules the world."

DISCUSSION.

By J. S. Hill.—Mr. Chairman and Gentlemen: I don't believe that I can offer much to what has been said by Dr. McGuire, but still the fact that we continually get these cases, proves to me that we ought to discuss it in our meetings. I flatter myself, and have for a number of years, that I hav'n't had a case since '86. But about six weeks ago, I had a case of child-birth and after I had taken all the precautions that I thought necessary, I went home; about thirty-six hours following the labor, the husband came for me. It was about 2 o'clock in the morning. He said his wife had a chill and she wanted me right away. I went; I found the patient just recovering from a chill, pulse 130, temperature 99. She had been suffering some pain. I gave her something to relieve her for the time being and I staid there for a short time. I used a bichloride solution for a wash. I hav'n't used a uterine wash for eight years. Her temperature never went above 99 and the next morning when I saw her, her pulse was 99. She has gradually improved until now she is well.

Since the Secretary notified me with regard to this paper, I have read an article written by Dr. Montgomery of Philadelphia. He divided these cases into two classes, putrifected and infected. His opinion, of course, is one which ought to be studied and taken note of, but to me a putrified case without infection from without is a question. I don't think a blood clot will be left if everything is carried out as it should be. I think the one would cover the whole, yet

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the doctor makes that distinction in his paper. I have often wondered if we advocate perfect cleanliness in each case of labor. We go there and do our part for the time being. We come away and leave that case in the hands of someone who has no knowledge whatever as to the requisites. We may speak to them and tell them what to do, but when we leave that case we know not what will happen. We leave that case, practically a surgical case, in the hands of someone who has no knowledge of what asceptic conditions mean only as to blood poison, as they express it. They know nothing about the cleanliness which should be exercised at that time. My impression is that these cases, every one of them, should be in the hands of an assistant who has been trained especially for that class of work. I don't know as we shall ever get to that, but in my judgment it is the only true way to treat such cases. If we have a surgical case, we generally leave the patient in the hands of a trained nurse, but in these cases we leave the patient in the hands of ignorant pople.

Dr. F. L. Osgood of Townshend.—I delivered a woman after an extremely difficult labor. I was very careful of my antiseptics, and I left her in a very comfortable condition. In three days I was called. The woman had the usual symptoms of infection. I was puzzled as to the source. I had not allowed any common cloths near the perineum. The secret was I had an untrained nurse. The lady was somewhat sore and she wanted soft cloths used, and they had a silk handkerchief which they had used continually without cleansing. I found that I had to instruct my nurse farther than I had done, that was, not to use a cloth a second time.

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Dr. C. F. Camp.—I want to relate one case which I had recently. Before doing that, I would like to make one or two suggestions. One inquiry was made to me, why wouldn't you do the same thing with these cases as you would do with a surgical case? Now, labor is supposed to be a natural sickness and not a pathological condition, and that is why labor takes care of a great many things that a surgeon has to deal with. Two weeks ago, I had a case of puerperal septicaemia. When I was called the patient's temperature was 102. That was in the morning at 7 o'clock. I remedied the trouble at that time and said I would come back at noon. I was called before noon, however. She had a chill. I met Dr. Reed on my way going there, and as I anticipated some trouble, I asked him to come along with me. He did. When we arrived, her temperature was 106 or 107 and she had a very anxious look, such as you get just before dissolution. We washed out the cavity with between three and four gallons of bichloride and carbolic solution and finally with the saline solution. We waited a half hour and then we found that she did not have any pulse. We put a quart of saline water under each breast and in about a half hour her pulse was fairly good and she began to come around all right. The next day her temperature was 99 and she never had any more chills or temperature, but made a rapid recovery. Many of you have the *Vermont Medical Monthly;* in the edition of Sept. 25th, '02, you will find an article by H. Plympton of Brooklyn. In that article he advises the non-use of the curette, but I believe in curetting the uterus, for I have found after the seventh day there would be several fungus growths that no amount of washing could dispose of. I believe we should use the curette.

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Dr. P. E. McSweeney.—I wish to express my appreciation of Dr. McGuire's paper. It was a very well written paper and one which gives us something to think about.

I am one of the few who believes there is no need in having puerperal septicæmia if we look after our cases properly. If my hands are clean when I am making an examination, and if I see that there are clean pads placed about my patient, and if everything is kept clean, I am confident you will not find very much puerperal septicæmia. I was very much surprised to hear the patient of Dr. Hill's whose temperature was but 99.5 had a chill. I have never had any trouble with patients whose temperature was 99.5. I see a great many cases every week and almost invariably there is a slight temperature for a day or two. When the temperature goes over 100, perhaps 101 or 102, then I begin to find trouble. Either I am faulty or my nurse is. We do not all have nurses. The middle class of people can not afford nurses. There isn't one case in twenty that have a nurse to look after them. You will find if you talk with a practicing physician in this town, that puerperal septicæmia is extremely rare. If every physician who has a labor case steps to the faucet of running water and thoroughly cleanses his fingers before introducing them into a solution of mercury or bichloride, and then introduces them into the vagina, I will vouch that there will be very little trouble from that examination. I make as many examinations as I want to. I never use vaselin. I haven't seen a case of puerperal septicæmia in seven hundred cases I have had. There is something that causes the trouble either in the uterus or vagina, but it is almost always in the vagina. Dr. Camp solved the problem when he said curette the uterus and wash it out thoroughly. Some fellow asked me how often I would do

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it, say three or four times a day? Yes, three or four times a day or even oftener. Then how often would you curette? Two or three times a week. Why would you do that? Because there is something in there that shouldn't be there. I have curetted three times in twenty-four hours. If you have a patient with a chill, high temperature, I say curette the uterus and wash it out and nine times out of ten the patient will get better. Keep giving a nourishing diet and a good lot of stimulants, brandy and whiskey and nitro-glycerine if the heart is weak.

Dr. C. W. Bartlett.—This has been my policy in most cases where there is an infection and where it has passed beyond the uterus. I believe after curetting, to thoroughly wash the uterus and then, if necessary, open the posterior cavity and break down the tissue and pass in iodoform gauze for drainage.

Dr. H. A. Crandall.—I wish to relate a case of mine. The patient went on very well for seven days. I was sent for in the night of the seventh. I also sent for Dr. McSweeney. She was having an immense flowing. We both came to the conclusion that the cause was she had not the power or strength to resist the little infection, for we found practically very little to cause the trouble.

Dr. C. W. Peck.—I would like to ask Dr. McSweeney if it would not be possible for the patient, if she was in a bad condition, constipated, etc., if it would not be possible to be poisoned from her own blood and not be infected from an outside source.

Dr. P. E. McSweeney.—I am not prepared to say. I believe that all of the cases are caused by infection carried to them. I believe that the great majority, and in fact all of them, are caused by septic infection.

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Dr. C. W. Peck.—External or internal, Doctor?

Dr. P. E. McSweeney.—Carried through the genital tract.

Dr. J. M. Hamilton.—I attended a case at 6 o'clock and another at 8 o'clock and still another at 10 o'clock. The first case was a difficult case and the second was a natural case, and the last case a rather difficult one. The middle case died. On the sixth day she took a chill. No one could find the cause. I had a surgeon from Burlington and one from Boston. We found she had a slight inflammation of the peritoneum. There could have been no question as to the cleanliness of my hands, for I think if my hands had been dirty the first or the third case would have been infected as well. The nurse was all right, but what caused the chill and the death we were unable to say.

Dr. C. W. Peck.—I will make an observation. Years ago I read a book by Barker of New York on this subject and later I read the writing of Dr. Thomas and there was a great discussion upon puerperal septicæmia. Thomas said it was from some external condition, but Barker said it could come from inside as well. I am known as a liver crank down in my county, and perhaps it is well for me to extend my reputation a little farther. You can have a case of puerperal septicæmia without any external cause. My experience has led me to believe it. I tell you, gentlemen, the amount of poison which a woman may store up in her body during the nine months which she carried a baby would surprise everyone. Now, gentlemen, when you are attending to the other necessaries, don't forget to give your patient a mighty good dose of calomel.

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Address on Gynecology.

By A. Lapthorn Smith, M. D., Montreal.

Cancer of the Uterus.—I have chosen this as one of the topics of my address because I believe that in this field lie our greatest opportunities for saving life at the present time. Our course is not difficult to follow; we have only to place implicit faith in a few axioms and then to act upon them without a single hour's unnecessary delay. The first of these is that "Every woman with a lacerated cervix is especially liable to die from cancer, while the moment that her laceration is repaired her liability to cancer becomes very small." It should, therefore, be a matter of conscientious duty to explain this to every woman before or soon after her confinement, so that she will not only consent to, but actually seek an examination. If you can introduce the tip of your finger into the cervical canal, or if you feel a hook on either lip of the os uteri, insist upon having the tear sewed up, or if it is a bad one, amputate the diseased part of the cervix, which can be done by my method without losing an ounce of blood or leaving a trace of the operation, while at the same time making a tear at the next confinement impossible.

I can recollect a great many distressing cases of women who neglected to carry out my urgent advice and who have paid the penalty with their lives, but I will only mention two because they are about to die and because one of them came to me while I was writing this address.

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Yesterday a woman came to the Samaritan Hospital in a dying condition whom I had not seen for fifteen years. She told me that my parting words to her then were that if she did not have her lacerated cervix sewed up she might die of cancer at the age of forty-five. At that time I never imagined that my words would come true for the simple reason that I thought she would take my advice and have it done. But unfortunately she consulted another doctor, who told her that it was not necessary to have any operation and if there was no cancer in her family history she need have no fear of the disease. This made her happy with a false security, and when she began to flow again at forty-five, after having had the menopause at forty-two, she felt quite pleased, as she considered it a renewal of her youth. When the flow became profuse she consulted her false prophets again, and they lost a precious year in giving drugs instead of making an examination. At last she lost faith in them and consulted one of my pupils, Dr. Warren, who insisted upon an examination and who made the awful diagnosis of cancer of the uterus within five minutes of seeing her for the first time.

He sent her in the ambulance to the Samaritan Hospital, but the whole uterus was a necrotic mass which could be scraped away with the fingers and the broad ligaments were solid. She has only a few days to live.

The other case is a beautiful woman only thirty-three years of age whom I advised to have her lacerated cervix repaired two years ago, when I saw her only once. It was not convenient for her to have it done then, but she said she would have it done in a year. Exactly a year later she called again to have it performed, when I was shocked to find the whole cervix a mass of cancer. Two or three

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months were lost because the pathological examination was negative, but finally the report came that it was cancer and the uterus was removed, but too late to save her and she is now nearing the end.

The second axiom which I beg you to accept is "To consider every woman to be the victim of cancer until you have proof to the contrary, who have passed the menopause begins to bleed again either regularly or irregularly. It is only since I and my friends and pupils have begun to rely upon this one clinical symptom that I have been getting cancer cases at a stage sufficiently early to have practically no death rate from the operation, and absolutely no death rate after it from the disease. In one week at the Samaritan Hospital I removed three uteri for cancer; the first was sent in by Dr. Smythe, and although he made the diagnosis within five minutes of his first seeing her and her uterus was removed within two days, she is now dying six months after her operation, because the disease had already extended beyond the uterus when the latter was removed. In the two others who came to the Montreal Dispensary there was no pain, no foul smelling discharge, no cachexia, only the one clinical symptom—hemorrhage coming on in women past the menopause. In one there was an angry looking little ulcer in the angle of a lacerated cervix, but when her uterus was removed and cut in half through this sore the disease could be plainly seen within an eighth of an inch of the limit of the organ. This woman did not die, nor will she die from the disease; she is alive and well to-day. The other patient did not even have a little sore on the cervix and my assistants could hardly believe that I would remove the uterus just because she was having hemorrhages two or three years after the menopause, the only other sign present

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being an enlargement of the uterus to double its size. But I did remove it and after bisecting it after removal there was the angry ulceration up near the left cornu, from whence the bleeding came, but extending half way through the wall. She is also perfectly well to-day.

Now, why wait in either of these cases until the disease should have gone beyond the uterus, rendering the primary mortality higher and the ultimate death from the disease sure? The symptom of bleeding after the natural bleeding has ceased is such a serious one that no practitioner of medicine of average intelligence could overlook it, and having once observed it no possible excuse should be accepted for not acting upon the hint. Not in a month, or even in a week but immediately. Although it may sound paradoxical, it might be put in this way: If you wait until you are sure that the woman has cancer of the uterus you will be too late to save her; the organ must be removed as soon as there is a suspicion of it, and even then it is late enough. Forgive me if I speak strongly, but this is a chance of a lifetime to address such a large and influential body of practitioners, and I feel that I would be shirking my duty if I failed to embrace this opportunity of urging every one here to join the great twentieth century crusade to drive this fell destroyer from our patients' homes.

Another axiom which appeals rather to the prevention than to the cure of cancer is this: Cancer of the uterus is not an hereditary, but a contagious disease. I cannot take the time at present to prove this statement, but I assure you that I have proof in my possession which would convince any sane man of the truth of it. It is not hereditary and if any daughter contracts the disease whose mother died from it, it is because she has infected herself while ministering to

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her mother's needs. Let us warn those who are attending cancer cases of the danger of spreading it by contact and above all let us physicians be able to say that we have always disinfected our fingers with bichloride of mercury after examining a cancer case before we touch another woman. It has been the exception that any of my cancer cases have had parents who died of cancer and the sooner that its heredity is exploded the better.

These remarks apply to a large extent to cancer of the breast. I have operated for this condition about twenty-five times, and although some of these operations were very extensive, I have had the good fortune not to lose one from the operation. Of those from whom I removed the breast early, just because there was a hard lump in it and the nipple was retracted and the woman was about forty, every one is still alive after five, ten and even twenty years.

But of those in whom we waited until there was the additional evidence of enlarged glands in the axilla, although all recovered from the operation, not one was alive after two years, notwithstanding that I removed the pectoralis major and minor muscles and every vestige of fat and lymphatics from the axilla. Many of the doctors who sent me these patients told me that they would have sent them to me much sooner but they were waiting until they were quite sure that it was cancer. No wonder then that I am opposed to this waiting, since at the end of it, the operation does no good. At a recent discussion of this important subject before a well-known medical society, the opinion expressed by all the most experienced surgeons was that every breast with a lump in it should be removed if the woman was nearing forty, as even benign growths frequently become malignant at that age.

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Lacerated Cervix.—Let us now leave this unpleasant topic of cancer for a time and take up the important question of lacerated cervix. Most of those whom I am addressing attend confinements and I sympathize with them in the trials and difficulties which this branch of their practice entails. What are you to do when you are summoned to a confinement ten miles away from your home and when you get there you find that labor has only begun, or the os uteri only open the size of a half dollar. If you put on the forceps and finish the labor you will surely tear the cervix, and if the woman is a primipara the perineum as well. It would be far better to either give her a little opium and go away, to return when sent for, or else to remain there for from ten to twenty hours until the os was fully dilated, making a just and righteous charge of so much an hour for the time you give up to her. If you go away, leave directions with the nurse in case the baby should be born before you arrive, that absolutely nothing must be done beyond lifting the child's mouth out of the water, and if the cord is twisted around its neck to untwist it. The cord must not be tied or cut nor the woman touched by anyone but the doctor. You can explain to the woman when she engages you that no harm will come to her or the baby if she leaves it there for an hour or two, and allows no one to touch her until you come. I have followed this plan many a time and have never seen anything but benefit to the mother come from it. People can be educated to anything, and why could they not be educated to pay for a doctor's time as well as anybody else's? Our present method of charging so much for the confinement and attendance, irrespective of distance or the difficulties of the case, or the time consumed in doing the woman justice, should be revised. The fee

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should be made up of a reasonable charge; first, for the confinement, including an hour's time; second, for transportation at so much a mile, if you use your own vehicle; third, so much an hour for all the hours you are away from your office, including visits; fourth, for the anaesthetic and other necessary medicine. If this method were adopted throughout the State it would be easy to educate primiparæ not to send for the doctor until they have been twenty-four hours in labor at least, instead of calling him at the first pains, as was done by many of the women on whom I have operated for the most extensive tears.

Let us now lay aside the question of prevention and turn to the repair of lacerated cervix. Many of these are long and conical to begin with and when they are repaired by Emmet's method they are exceedingly liable to be lacerated again. The thought of this possibility deters many young child-bearing women from having it sewed, and I must say that I have noticed a more prolonged and painful first stage of labor in the women on whom I have done an Emmet's operation. Only by giving opium so as to prolong the first stage have I avoided a second laceration; I have therefore since two or three years been amputating all these club shaped hypertrophied cervices by an almost bloodless method. It consists in making an incision just back of the diseased surface on the cervix, like the first step of vaginal hysterectomy and pushing back the mucous membrane, catching up any little bleeding points. The uterus is then drawn out until you can feel the base of the broad ligament, which you tie with a single stitch on each side. Divide between the ligature and the uterus, when there will be no difficulty in drawing out and cutting off so much of the cervix as will leave the remaining uterus two and a half

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inches long. In some cases this means removing four inches of diseased and lacerated cervix. Then the mucous membrane, which had been detached, is reunited to the cervical canal with two stitches above and below and the remaining slit on each side is closed by a fine running catgut suture. I have examined several of these cases two months later and could hardly tell that they had ever borne a child.

Another direction in which we might save many more lives than we do if more attention were directed to it is in that of tubal pregnancy. Many women die every year from it, and they might all be saved if the condition were recognized earlier and removed. It has been my good fortune to have operated on twenty-three of these cases, all of whom recovered, although some of their abdomens contained more than a gallon of blood, and some of the patients were quite unconscious when brought into the hospital. About a third of these cases were discovered by myself, the rest were sent to me by former pupils and young practitioners whom I had trained to be on the lookout for them. Lawson Tait said that it was impossible to diagnose a tubal pregnancy before rupture, and that was doubtless true at that time; but since then the practitioners are looking out for these cases all the time and so they are discovered much earlier; more than half of my cases were operated on before rupture. It is true that my friends and I have made a mistake sometimes; we have diagnosed a tubal pregnancy when there was only a pus tube; but it was a good mistake to make, for next to a tubal pregnancy a pus tube is one of the most dangerous things a woman can have in her abdomen. In fact I feel safe in saying that in view of the possibility of these two conditions being present no practitioner should rest content until he is able to say in any given case whether

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there is a mass in the pelvis or not; and if that mass does not disappear after a good dose of castor oil, he is safe in advising the removal of it as soon as possible. As you all know the death rate of abdominal operations is coming down steadily year by year; but all the credit of this improvement is not due to the increased skill of the operators; a fair share of it must go to the general practitioners who discover these diseases much earlier, before the pus tubes and tubal pregnancies have ruptured and before the ovarian cysts have become twisted and gangrenous, and before they have become adherent to the bowels and abdominal walls. It is now very rare for me to see a two or three gallon ovarian cyst, such as were common twenty years ago, simply because the general practitioner, even in the most distant country place, detects them and urges operation long before they get that big. It is a mistake to think that we should wait until we can tell to a nicety whether a mass which we feel is a round celled sarcoma or on the contrary a carcinoma of the ovary; that is useful and interesting to know after the woman's life has been saved by its removal; but in the meantime let us get the tumor out and save the woman's life. My experience with pus tubes illustrates this well; some were seen too late for any operation and the women died; some were seen after rupture and about half of them died, the rest being saved by an emergency operation; others again were seen after years of suffering from recurrent attacks of pelvic peritonitis and made desperate cases, with a mortality of twenty per cent., pus pouring into the rectum, bladder, ureter, vagina or through the skin of the abdomen. Others, an ever increasing number, were operated upon soon after their first attack of pelvic peritonitis, and nearly all recovered. So that the death rate from pus tube operations, which is nearly ten per

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cent. on an average, could, I am sure, be brought down to less than five per cent. if it was the unanimous opinion that abnormal masses in the pelvis should be removed soon after their discovery.

As the reader of the address I am allowed considerable latitude in dealing with my subject, and I have taken advantage of the opportunity to draw your attention to a few points in which I thought there was most room for improvement in our present methods of dealing with them.

248 Bishop Street, Montreal.

DISCUSSION.

Dr. H. C. Tinkham.—Gentlemen: I was very glad when Dr. Smith sent me this paper to read for I thought I would get out of the matter easily. I am not going to say very much in the discussion of this paper. The ideas that Dr. Smith has conveyed so clearly covers the matter very well. In all of these cases much depends upon an early diagnosis, for in the majority of cases of cancer of the uterus, the cause is an old laceration. I was going to say that no physician would be justified who did not urge every woman who has a lacerated cervix to have it repaired immediately. Many patients come in and say that their physicians have advised them to wait until they get through bearing children. It is not necessary to wait. I have seen cases where they have been torn and repaired and they can be repaired every time. I saw a patient who had a torn cervix at the time her first child was born, and later she had other children and the time the last child was born it was found that she was suffering from cancer. A torn cervix should be discovered within an hour at least.

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Tubal pregnancy is familiar to you all. If you are watching out for it, you will have comparatively little difficulty.

I do not believe it is conservative to leave a patient in any danger, and I say take out all of the diseased tissue and put your patient in a position where she will be well afterwards.

Dr. Vincent.—I would like to report some cases of cancer of uterus which I have attended during the last six months. They occurred in women about forty-five years of age. Two of them had never borne children and one of them had had one child some twenty years ago. I discovered these cases at the first visit. The only symptom was pain in back, which had been pronounced lumbago. One had been under the care of a physician in New York. She was afterwards under my care. She had lost twenty-five pounds. I advised a vaginal examination. I found it past operation. These three cases of mine came on without any symptoms. This goes to show how careful we shoull be in looking after our cases with negative symptoms.

Dr. H. D. Holton.—I think there is a great deal in this paper which is very valuable, but I also think there is a great deal that is very dangerous. The case which Dr. Vincent has spoken of comes very strongly in accord with the experience that I have had. We may have cancer of uterus in patients who have not been lacerated and married and in those who have been lacerated and married. We all know that cancers are increasing during the last fifteen or twenty years. Our grandmothers had lacerations and our mothers, and yet they never knew it, and occasionally now we find women who have lacerations and cancers and they do not know it. Many would

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know nothing about it unless we operated for lacerated cervix. When women have passed the menopause and there is a hemorrhage, I am convinced that cancer is present somewhere in the genital tract. Some years ago I had the honor to read a paper before this Society on cancer. After going over the matter of 114 or 115 cases, I found that 52 per cent. had never returned for operation. I was quite surprised, for I should have said two-thirds returned.

Dr. C. W. Peck.—I had a case of cancer about two years ago which I wish to speak of. I attended this woman in confinement. When I made my first examination, something impressed me of an abnormality. When I examined her the second time, she was probably far advanced in labor. I straightened everything out and went along. She was a strong woman. About three months after, she sent for me, saying that she had never stopped flowing. She said she thought she ought to. I said I thought she had too. I made a digital examination and found a cancer in the neck of the uterus. I convinced her she must go to the hospital. Dr. Wheeler was there. The whole uterus was removed. That was two years ago, and that woman has been doing from five to seven washings a week since and is as rosy as any school girl and is healthy and strong. My conclusion is that if I was a woman and had confidence in any physician I would go to him and have him look me over to see if there was anything wrong. I think this prompt removal of the uterus was what saved that woman's life.

This woman that Dr. Vincent spoke of came to see me. She complained of a severe pain in her back. If she had had an earlier examination, it is my opinion that she could have been saved.

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I want to add my thanks to Dr. Smith for his paper, and it is one which will bear study on the part of all of us, and I am very glad for one that I had the good fortune to be here to listen to it.

Dr. E. R. Clarke.—When a patient comes to me complaining of pain in the small of the back, it is my judgment, after fifteen years' experience, that in all such cases, a vaginal examination should be made, and I think you will find that the trouble is there.

Dr. J. B. Wheeler.—Some three or four years ago I read a paper on cancer of the uterus and in which I spoke of lacerations causing cancer, and I also spoke of hemorrhage in the fifth decade as being a symptom of cancer. I advise an examination and if a cancerous condition is found, I advise immediate hysterectomy. I could report many such cases as Dr. Peck has just spoken of. I do not think we can be too careful in investigating the cause of hemorrhage or oozing of blood in the neighborhood of the menopause. If any malignant condition is evident, of course it should be removed immediately.

Dr. H. C. Tinkham.—I don't know as I have much more to say. I would like to say, however, that I believe that we physicians here have got to do something. If a doctor fails to save a patient's life where he might have, I would like to know if he considers he or Almighty God is responsible. I believe all of us are altogether too lax in our diagnosis. We allow a great many lives to be sacrificed because of failure to make an early diagnosis. There are conditions which I believe can be cured if they are recognized early that are not amenable if they are allowed to go on until they are thoroughly established. If we are up to our business, we can make a diagnosis earlier than we do. I have operated on

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several hundred and I haven't any mortality to report as yet. It is such a simple operation that if it promises any security there is no excuse for not doing it. I do not understand from Dr. Smith's paper that every case of laceration resulted in a malignant growth. If a certain per cent. of these cases do result in malignant growths and it is not curable when it is established, why not operate on all lacerated cervices and thereby do away with some of the cases of malignant disease if they may result from a laceration.

Some authorities state that every case is due to some traumatism. I believe that the development of malignant growths in the cervix is due to some form of traumatism and the most common is laceration. I believe that quite a per cent. of these cases of laceration do result in malignant growths. If we get at them early enough to save one now and then, we can consider that we have done something

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Adiposis Dolorosa (*Dercum.*)

With the Report of a Case.

By H. C. Gordinier, M. D., Troy, N. Y.

Adiposis dolorosa may be defined as a peculiar form of dystrophy, resembling somewhat myxedema, occasioned by special deposits of fats, more or less symmetrically distributed, which are characterized by a peculiar elastic or fibrous feel as if a bunch of worms were beneath the skin and which deposits are tender on pressure or movement. Pain also precedes and continues during the progression of the disease of an intermittent neuralgic-like type.

The first case of this disease was described by Dercum in 1888 as a case of subcutaneous connective tissue dystrophy with symptoms resembling myxedema.[1]

In 1891 Henry reported before the Philadelphia Neurological Society a case similar to Dercum's, as one of myxedematoid dystrophy and proposed for the condition the name paratrophy.[2]

In a later communication, Dercum reports a third case, together with his first one and the one of Henry's, describing them as "three cases of a hitherto unclassified affection resembling in its gross appearances, obesity; but associated with special nervous symptoms," and giving them the name of Adiposis Dolorosa.

Since the publication of Dercum's and Henry's cases, a case has been reported by Ewald[3]; one by Vitaut[4]; one by Fere[5]; three by Spiller[6]; two by Eshner[7]; one by Guidice-

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andrea[8]; and one by Alger[9]. In a text-book of nervous diseases by American authors, Collins refers to six cases of Peterson and Loveland, and one under his own observation[10]. In the *Philadelphia Medical Journal* for March, 1902, Dercum reported two typical cases, one of which occurred in a male.

At the twenty-sixth meeting of the American Neurological Association, Dercum referred to his original case and gave the results of the autopsy, together with an exhaustive study of the microscopical findings. At the same meeting C. W. Burr reported a case of adiposis dolorosa with a complete autopsy. These two cases are the only ones with autopsies and microscopical examinations recorded in literature. They will be referred to again in discussing the etiology and pathology of this interesting and peculiar disease.

Symptomatology.—The fully developed cases of adiposis dolorosa are usually short in stature, stout and apparently very obese; weighing from 225 to 300 pounds or more, with a peculiar myxedematous-like appearance but without thickening of the skin, special loss of hair, reduction of temperature, or change in the hands or feet. The skin is white, soft, pliable and of a rather unctous feel. The deposits of fat have often started just before or with a rather early and abrupt cessation of menstruation. They are more or less uniformly distributed throughout the body, sparing the hands and feet; but have as seats of predilection the shoulders and arms, folds of axillae, mamma, abdomen, buttocks, back and calves. The deposits of fat are tender on manipulation, have a peculiar boggy, elastic or fibrous feel, do not pit on pressure and have the feel first described by Dercum, as if a bunch of worms were placed beneath the skin, not unlike that of a vericocele.

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During the progression of the disease, and often preceding it, neuralgic-like pains are common; these usually stop when the disease ceases to progress. Most patients are exceedingly nervous, are very weak and suffer from dyspnoea. The heart sounds are feeble and valvular. The muscular element of the first sound being faint or absent. In some cases, muscle and nerve tenderness exists and patches of anaesthesia are often present. Occasionally they are excessively sensitive to all forms of external stimuli (hyperaesthesia). Often they are unable to walk or stand.

In most cases the thyroid gland was not palpable; this may be due to atrophy, or as in my case to the mechanical hindrance occasioned by large depositions of fat in the subcutaneous tissues of the neck. The blood presents nothing abnormal. The urine is usually normal, though with an occasional high specific gravity.

The pathology of adiposis dolorosa remained in absolute obscurity until the publication of the post mortem and microscopic findings in the case of Dercum's and Burr's, and while these cases, together with the two previously published without microscopic examinations in Dercum's original article (*American Journal of the Medical Sciences,* November, 1892) have elucidated some of the problems connected with the pathology of this obscure disease, the exact causative factor in its production still remains unsolved.

The two cases above referred to, while somewhat at variance with one another, in regard to the findings, are in the main very similar. Hence, owing to their great interest pathologically, will be reported here in full.

Autopsy of Dercum's Case.—The body is that of a woman, weighing probably 300 pounds. There is an excessive deposit of fat in the subcutaneous tissue. It is especi-

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ally marked over the arms, shoulders, back, and to a less extent over the abdomen and thighs. The hair of the pubis is scant, anl there is almost none in the axillae.

In the median line the abdominal fat is 5 cm. in depth. In the epigastric region a small nodule of fat about an inch in diameter is found imbedded in, but separated from, the general subcutaneous fat, like an independent lipoma. Several such encapsulated imbedded lipomata were found in various situations; for instance, the back and the right thigh. On opening the abdomen the intestines are well distended with gas; the omentum is filled with fat; the liver extends 2 cm. below the costal margin on the right side; the thorax is well formed; the ribs are well ossified.

Pleural adhesions exist on both sides; the left pleura shows firm adhesions anteriorly and posteriorly. The right pleura shows the same condition as the left.

The parietal layer of the pericardium is covered by a thick layer of fat; the pericardial sac contains 35 cc. of clear straw-colored fluid. The sub-pericardial fat of the heart is very abundant. On opening the right side of the heart, large currant jelly flat clots are found in the right auricle and ventricle. The left side of the heart contains little blood. The heart muscle is friable and of a yellowish color; the wall of the left ventricle measures 2½ cm.; of the right ventricle ½cm. The aortic valves are slightly thickened; the right auricula-ventricular opening admits three fingers; the left two. The remaining openings and valves are normal.

The left lung on section shows marked oedema, no tubercles are found. The pigmentation is slight. The right lung also shows extensive oedema. The spleen measures 17

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x7½x2½ cm. The capsule is wrinkled; the pulp is soft and dark red in color.

Left kidney is surrounded by a thick layer of fat. The ureter is single. The kidney measures 14x6x3 cm. On the surface, projecting outwards, are seen a number of cysts. The capsule strips with difficulty, and the surface is granular. The surface of the kidney is greasy. The cortex is increased comprising only one-half of the kidney structure. The color of the anterior surface is yellowish red. The cortex is lighter than the medullary structure. The right kidney measures 13x7x3 cm., and closely resembles its fellow.

The suprarenals are apparently normal. The stomach is rather small; walls are not thickened; mucosa shows some post-mortem change. The pancreas is surrounded by much fat. Section shows no gross change.

The liver measures 29x20x5 cm.; surface is finely granular; edges are irregular and rounded; the knife meets with a good deal of resistance. Color of cut surface is reddish-yellow brown. The bile duct is patulous. The bladder and uterus are normal. The brain, cord and membranes reveal nothing abnormal. The thyroid gland is quite small.

The microscopical examination included a study of the fatty tissue, the peripheral nerves, the spinal cord and brain, the pituitary body and the thyroid gland. The fatty tissue in itself presented nothing to distinguish it from ordinary fat. This was not, however, the case with the peripheral nerves found in it. These presented the undoubted evidences of an interstitial neuritis, evidenced by a marked diminution and atrophy of nerve fibres, together with a marked proliferation of the perineurium and edoneurium. No changes were observed in the larger nerve trunks.

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The spinal cord presents some change in the upper thoracic and lower cervical regions. There is a slight degeneration in the columns of Goll. This change is most marked in the upper thoracic region. The lumbar cord fails to reveal any changes.

Various portions of the brain examined, reveal no change save unusual pigmentation of the cortical cells. The pituitary body presents nothing abnormal. The acini and the cells composing them present an absolutely normal appearance.

A study of the sections from the thyroid gland shows it to be made up of three or four different kinds of secreting tissue. In the first place, there are large acini distended with colloid material. These large acini vary in size, and their contents vary also in density. The larger acini are globular in shape, while some of the smaller ones are elongated or angular in form. The limits of these acini are clearly indicated by blood vessels, which occupy their walls. The epithelium is a single layer, which covers uniformly the peripheries of the acini. Contrasted with these there is another kind of secreting tissue, which is very solid, and in which the acini are made out with great difficulty. They consist of cells filling interspaces of the stroma, and the blood vessels supplying these acini can only be made out in exceptional instances. The lumina of these acini when they can be made out, are usually very small. There is here a complete absence of colloid material. In other portions acini are observed which are a transition between the more solid nests of cells and the large vesicles which contain the colloid material. In addition, there is a third form of acinus, which is of peculiar interest in that the acini present plications or papillary outgrowths of their walls. These

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plications or outgrowths project into the lumina of the affected acini, which contain, as a rule, colloid material of lighter staining qualities than the larger vesicles. The epithelium of these last mentioned acini appears at times to be slightly higher than the normal cubical epithelium of the other vesicles. Finally, in some areas, solid masses of cells resembling lymphoid cells are seen, but these are probably young solid acini, like the small acini described above, though the limits of these acini are irregular, because of the absence of preserved blood in the sorrounding vessels and of the absence of definite interstitial framework.

Autopsy of Burr's Case.—The fat revealed, on gross examination, a peculiar, fibrous character, it being firmer than normal subcutaneous fat, and showing here and there encapsulated areas softer and less yellow in color. These isolated areas of fat varied in size from a pea to a hazelnut and were surrounded by a distinct fibrous capsule. There appeared to be no connection between this fat and the firmer fat imbedded in the fibrous structure surrounding the fatty nodes. These nodules were not immediately beneath the skin, but deeper in the subcutaneous fat, and could not have been distinguished by palpation. On microscopic examination the firmer masses treated with connective tissue stains revealed a marked increase of this tissue, whereas the fatty nodule was normal in this regard, but an artery which ran through it was distended and its coats were thickened. We were unable to find any nerves in the fatty nodules, but in the surrounding fat and in the underlying muscles the smaller nerve branches showed a high grade of interstitial neuritis. In the muscles this was associated with a granular fatty degeneration of the muscle fiber, the granules staining black with osmic acid. The interstitial changes in

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the fat of the nerves were more marked. The nerve fibers, when present,were few in number and surrounded by a dense connective tissue. In the nerve filaments in the muscle the connective tissue was decidedly increased, but there were more normal nerve fibers present than in the fat.

The ulnar, median, sciatic, peroneal and tibial nerves were examined. The Marchi, Weigert and carmine stains revealed no degeneration. In the sciatic nerves fewer nerve fibers were present than usual, and there was an infiltration of fat, most marked in the central areas, which gave to the fresh nerve a semi-gelatinous consistence.

The Brain.—A glioma the size of a walnut occupied the seat of the pituitary body and embraced the optic chiasm and nerves. The tumor extended into the interior of the brain, grew through the aqueduct of Sylvius, completely filling it and filtrating its walls to a slight degree, and filled up the upper area of the fourth ventricle. There was marked internal hydrocephalus.

The spinal cord showed a considerable grade of hydromyelia, extending down to the dorsal region. The external lateral group of cells of the anterior horn showed a light grade of chromatolysis.

In the right lobe of the thyroid gland there was a spherical concretion as large as a hickory nut. The gland was normal in size. On microscopic examination colloid degeneration with atrophy and absence of the secreting cells in many acini was found. There were many areas of small round cell infiltration and indications of an active inflammatory process were present everywhere. The muscles showed marked degeneration with the osmic acid method. It was probably secondary to degeneration of the nerves, as

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a medium grade of interstitial neuritis of the intramuscular nerve bundles was present.

There was acute parenchymatous nephritis with slight low-grade interstitial change. There was marked fatty infiltration of the liver.

The ovaries were examined by Dr. H. L. Williams, who reported as follows: "Surface smooth; no inflammation apparent. Tunica albuginea appears very much thickened, sclerotic, and hyaline. The deeper tissue of the stroma is dense and contains large numbers of primordial Graafian follicles, and in the connective tissue beneath the ovarian stroma are large numbers of blood vessels with well-developed muscular walls. Scattered here and there through the stroma are a number of corpora fibrosa and also a few small cystic Graafian follicles. Projecting from a surface in one portion is a small body the size of a split pea, the tissue of which is directly connected. Its surface is smooth, but inflamed, and it contains, a short distance below the surface, a number of undeveloped Graafian follicles, and just at the surface a small cystic follicle. The specimen is a small, typically sclerotic ovary."

To summarize the pathological findings in these two cases, we have an atrophy of the true secretory structure of the thyroid gland in each case examined microscopically, while in the two cases of Dercum before referred to, without microscopic examination, the thyroid gland was diseased in each. In one the gland was noted as "Small, indurated and infiltrated by calcareous matter in both lobes," and in the other as larger than normal, harder to the feel and much calcified, especially the right lobe.

An interstitial neuritis was found in each case involving the nerves of the subcutaneous fat, as well as those

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within the muscles. The spinal cord in the case of Dercum's showed a slight degeneration in the columns of Goll, most marked in the upper thoracic region. The cord of the case reported by Burr showed considerable degree of hydromyelia extending down to the dorsal region. The external lateral group of cells of the anterior horn showed a slight grade of chromatolysis. The brain showed nothing abnormal in Dercum's case, save unusual pigmentation of the cortical cells. In the brain of Burr's case a glioma the size of a walnut was found occupying the seat of the pituitary body and embraced the optic chiasm and nerves. The fat in Dercum's case presented no special change. In Burr's case, however, it showed a peculiar fibrous character, rich in connective tissue and hence much firmer than normal. It also presented areas varying from the size of a pea to a hazelnut, which were soft, less yellow in color and encapsulated.

In addition there was found in the case of Burr's, typically sclerotic ovaries. That which is most interesting in all of these cases, pathologically, is the diseased condition of the thyroid gland. The pertinent question arises, can we associate a causal relation between the loss of function of the thyroid gland and the production of the symptoms of adiposis dolorosa. It is a well established fact that disease of the thyroid gland produces marked changes in the nutrition of the body, resulting in myxedema and cretinism. And in this connection is to be emphasized the fact that while adiposis dolorosa is a distinct clinical entity, it presents more than a superficial resemblance to myxedema, and like that disease it is often improved or cured by the administration of thyroid extract.

May not then a perversion of function of the thyroid gland result as suggested by Dercum, in some substance be-

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ing thrown in the circulation, which, "at one and the same time prevents the proper oxidation of the hydrocarbons of the food and tissues, and also acted as a cause of neuritis and nerve degeneration?"

In Burr's case it is interesting to note that in addition to the involvement of the thyroid body the pituitary body was destroyed by a glioma and both ovaries were sclerosed. Disease of the pituitary body is commonly attended by an alteration in the nutrition of the osseous system, resulting in the disease known as Acromegalia. In no instance of this disease has an overgrowth of fat been produced, resembling at all adiposis dolorosa. Hence this condition was probably a mere coincidence, which explains in Burr's case the cerebral symptoms, together with the loss of vision and optic neuritis.

The sclerosed condition of the ovaries found in the case is very interesting because of the well known fact that removal of both ovaries or testicles is commonly followed by an over-production of fat. Women at the menopause frequently become obese and artificially induced menopause is often followed by an overgrowth of fat. Spayed animals are usually very fat, and eunuchs are commonly obese.

In conclusion it may be stated that it is idle to further speculate as to the etiology of the affection, as many more cases must be carefully studied, both clinically and pathologically before any positive etiological factor can be established to explain the symptoms of this strange disease. It is interesting to note that of all the cases that have been reported only four have been observed in the male, these Ewald, Vitaut, Fere and Dercum's last case.

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Mrs. E. B., age 43, white, native of the United States, occupation housewife, entered the Samaritan Hospital, Dec. 3rd, 1900, complaining of cough, pains in legs and inability to walk. Her father died of some form of paralysis; mother is dead, cause unknown. Has no brothers or sisters; no tuberculosis in family. No distinct neurotic family history obtainable. Patient had la grippe two years ago, otherwise has always been healthy. First menstruated at thirteen; flow moderate in amount and always regular up to the spring of 1899, since which time menstruation has ceased. Has had four healthy children and two miscarriages, each at the third month of gestation. After child-bearing increased somewhat in weight but never weighed more than 150 pounds. In 1896 began to gain flesh very rapidly and when last weighed, which was in the autumn of 1900, her weight was 225 pounds. She denied absolutely any venereal disease, and the most careful examination failed to elicit any evidence of syphilis. She acknowledged an occasional alcoholic excess, chiefly in the form of beer or ale. She perspires freely in hot weather and is exceedingly sensitive to cold, always being worse in winter. Complains of shortness of breath on the slightest exertion, as going up stairs or the like.

Examination.—Patient is short and stout and apparently very fleshy, her height is 61 inches, her circumference at level of umbilicus 52 inches, and at level of the third rib 43 inches. She weighs 250 pounds. The chest is massive but otherwise normal, there is no deformity or rigidity of spine. Pupils midwide and equal, respond to light and accommodation, movements of eyeballs normal; vision perfect, no change in optic discs. Heard watch three feet away from each ear; smell and taste normal; movements of facial mus-

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cles, as well as those of mastication and deglutition normal. Tongue normal in size, rather livid in color, protruded straight, and presented a slight whitish coating in center.

Lips not thickened, nose flattened and retracted at base. The patient has a myxedematous appearance, her expression is heavy and vacant, and there exists over each malar eminence a distinct dark reddish flush. The skin of the face or other parts of the body, however, is not at all infiltrated or thickened, and is rather soft and unctous to the feel. The hands and feet, which are normal in appearance, are in strong contrast to the rest of the body. There is no paucity of hair on the scalp, eyebrows, lids or in the axillae, but the hair is rather coarse and stiff, no seborrhoeal like scales exist on scalp or skin. She has a double chin, together with great transverse folds of fat involving the skin and subjacent tissues of the neck. In the region of each parotid gland are enlargements apparently due to deposits of subcutaneous fat, which have a distinctly fibrous and elastic feel. The skin everywhere is easily movable on the underlying structure, and none of these fat deposits pit on pressure; they are, however, quite tender when handled. The ears are not infiltrated nor is the skin covering them thickened. The shoulders and arms are truly enormous, due to deposits of large masses of fat in the tissues about them, masses of fat thrown into huge folds are seen on each side hanging from the arms into the axillae, forming for the latter greatly accentuated anterior and posterior folds. When one grasps any of the above described folds, there is a feeling "so aptly described by Dercum," as if a bunch of worms were thrust beneath the skin. Extending from a large mass of fat in the right axillary region is a distinct tumor-like swelling (Lipoma),

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globular in shape, having the above described feel and very tender on pressure. The mammae are very large and are evidently the seat of special collections of fat, having a fibrous and elastic feel. The true glandular structure of each breast is evidently atrophied. The abdomen is large, pendulous and very prominent, it is in fact truly enormous. In the folds of the mamma and where the folds of the skin glide upon one another, very delicate silvery lines exist resembling the linea albicantiae; several small areas of atrophy are seen in the skin covering the chest and abdomen, a slight umbilical hernia is present, easily reducible.

The upper extremities can be moved in all directions, but movements of flexion and extension are easily overcome and the grasp of each hand is very weak. Sensation is normal and there exists no muscle or nerve tenderness.

The lower extremities are very large. The circumference of the upper third of each thigh is 27 inches, of middle of calf 15 inches and around each ankle at the articulation 9½ inches. They resemble on casual inspection those of a case of elephantiasis. Slight oedema along each tibia exists. When patient attempts to move the limbs, much pain is excited, which she refers chiefly to the knee joints, although they present no evidence of pathological change. Tenderness exists of the quadriceps extensor muscles, as well as those of the calf. The feet rest in a position of over extension. When asked to raise the limbs, they are lifted just above the level of the bed, but she is unable to sustain them in this position but a short time, when they fall as if paralyzed. The anterior crural and peronei nerves are tender on pressure. There is marked hyperaesthesia, she being exceedingly sensitive to the pin prick. No thermic or tactile anaesthesia. Muscular sense normal. No tenderness

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of tibiae or other bones. Patella, plantar, umbilical and epigastric reflexes absent. Bladder and rectum normal.

Electrical reactions are normal in the muscles of upper limbs. In lower limbs the tibialis anticus, vasti and calf muscles respond to the galvanic current, 30 cells in circuit (chl. silver battery) in a slow, worm-like manner, they respond as readily to the negative as positive pole. The same muscles did not respond to a faradic current, whose strength would produce a prompt reaction on a normal individual.

The thyroid gland was not palpable; this may be due to its being surrounded by an enormous amount of fat. The patient was unable to walk or stand alone without assistance. Apart from being forgetful, her mental condition was good. Her speech processes were perfect, and she could write as well as usual.

The heart sounds are distant and feeble, the muscular element of the first sound was almost nil, the apex beat was not visible or palpable. Owing to the huge mammary glands it was impossible to delineate the area of cardiac dullness. Liver dullness reaches to free border of ribs, its upper border in the mammillary lines was not definable. No splenic tumor present. Lungs negative. No free fluid in abdomen, a few dilated veins course over the abdomen.

Urine.—Specific gravity, 1020, alkaline, some albumen, few pus cells, no casts or blood. Feb. 17th, 1901, specific gravity 1030, urates and phosphates, no blood, pus, albumen or casts.

Blood.—Red 5,090,000, cells presented nothing abnormal. White 9,375.

No one who was familiar with the literature of the disease and had seen the photographs of Dercum's original cases, could have failed to make the correct diagnosis in this

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case. It was evident from the history and physical examination, that she was also suffering from a mild degree of acute multiple neuritis, and the subsequent history of the case bears out this diagnosis.

Her history while in the hospital was uneventful. She remained about five months, during which time she received electricity, massage, a restricted diet and thyroid extract. She improved very much in regard to her ability to stand and walk and all pain and tenderness of the main nerve trunks or the muscles mentioned in the history entirely disappeared, but her weight did not decrease, and the general pain and tenderness of the deposits of fat were the same as when she entered.

(1) Dercum. University Med. Mag., Dec., 1888.
(2) Henry. Journal of Nervous and Mental Diseases, March, 1891.
(3) Ewald. Berl. Klin Wochenschrift, Jan. 21, 1895.
(4) Vitant. Maladie de Dercum Lyon Med. 1901.
(5) Fere. Revue de Medicine, 1901—vol. iv.
(6) Spiller. Medical News, Feb. 26, 1898.
(7) Eshner. Phil. Med. Jour., Oct. 8, 1898.
(8) Guidiceandrea.
(9) Alger, E. M. Medical News, Jan. 19, 1901.
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Some Therapeutic Considerations.

By Edward R. Clark, M. D., Castleton.

The matter of therapeutics is a subject or question which meets us at every turn, a question ever old but always new, and like the poor always with us.

Medicine in all its branches has made wonderful advances since I began its study twenty years ago. Antiseptic surgery was just beginning to be talked about. The anesthetic properties of cocaine had not then been given to the world and were not until two years later, or in October or November, 1884.

Pathology in nearly all its branches has been revolutionized, particularly surgical pathology. It is only within about four years that what we now regard as the true pathology of fever and ague and yellow fever were discovered. In fact, I well remember that the article on fever and ague in the Twentieth Century practice of medicine having been already prepared and ready for the press, had to be entirely re-written and its publication was thus delayed nearly or quite a year.

I do not claim to be up-to-date in all respects; but I endeavor to use my eyes and ears to the best of my ability to keep abreast of the best thought in our line of work. In this generation if a man is entirely up-to-date in everything pertaining to the medical profession, he will have but little time to ride over our green hills or through our fertile val-

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leys attending to the wants of patients impecunious or otherwise.

A couple of months ago there fell into my hands the note books on therapeutics of the late Dr. I. N. W., dated Castleton, Vt., April and May, 1840, together with some papers, prepared at a later late, for presentation to some scientific body. I have not had time to go over them all, but in no instance could it be determined when or where they were presented.

In looking over one of these papers, entitled "The pathology of malarial and intermittent fevers," the contrast is indeed startling between the knowledge of pathology of that day and our more recent development. In looking over the book of notes and comparing them with more recent works on therapeutics, the similarity is, to me, quite surprising, and I have wondered if our grandfathers had learned all there was to know of opium, of hyosciamus, of conium, of aconite, of digitalis, or of many others whose efficiency depends on some alkaloid hidden by nature in the depths of its cellular entities. In these notes I find scarcely any reference to morphine and only the slightest reference to any of the other alkaloids and then only under antidotes to vegetable poisons.

In one of the most recent works on therapeutics in an article devoted to prescription writing, the prescriptions there given show a striking resemblance to those in the note book of 62 years ago. The difference is almost entirely in the phrasing, with almost exactly the same range of dosage. In both the older and the newer work the injunction is often given "to be sure and get a good article;" "to be sure that the medicament is prepared from an herb of undoubted pur-

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ity and gathered in the proper season of the year," without saying when or what is the proper season.

Now it is well known to analytical chemists that light and shade, moisture and dryness, have a large bearing on the amount of active principle which many of our medicinal plants contain; and it has happened more than once, perhaps more particularly in the past when the individual pharmacist made his own tinctures and extracts, made them with all the care at his command, that irreparable injury has been done even when the medicine was prescribed in moderate dose, because on the *one hand* it contained too large an amount of the active principle and on the other hand it contained so little as to be practically inert. And it is for this reason that we, every now and then, hear discussions pro and con for drug analysis and a better drug standardization. It is for this reason that the attempts of Parke, Davis & Co., with their normal liquid preparations, have been a step in the right direction.

But the situation would not be so bad were it not a fact that many or all of our active medicinal plants contain more than one active principle, often of conflicting and antagonistic properties, usually the principles of the lesser amount are the least desirable and do not apparently affect the action of the remedy; but under various and varying conditions of light and shade the ratio is reversed and consequently the action of the remedy; and this, gentlemen, is, I believe, one of the reasons why we have had in the past so many contradicting reports concerning the action of remedies.

I am well aware that at the present time, when most of our tinctures and extracts are prepared in large quantities, as they now are by our large concerns, that the average of therapeutic activity is much better than it was some years

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ago; but for all that I contend that there is a better, a safer, a more rational procedure and that is in the use of the alkaloids, resins, sesamoids, glucosides and concentrations now on the market and easily obtainable by almost everyone.

To be sure there is no doubt but what we must to some extent re-read, re-study and investigate anew some of our old standbys, as they are called. With these preparations during the last three and one-half years, I have been able to accomplish things, particularly in the treatment of nasal, throat and pulmonary troubles, which to me had, up to this time, seemed to be impossible. For a number of years I had almost discarded the use of many of our tinctures on account of the uncertainty of their action. A couple of years ago, in conversation with a distinguished member of this body, I found the same difficulties encountered and the problem solved much as I have been solving it.

It is not possible for a man to become proficient in the use of all these things at once, but if he will take a few of the most common, which are also the most important, at a time, he will soon be master of the whole situation. Judging the future by my past experience, I believe it will be only a question of time when tinctures and fluid extracts will be things of the past and when the alkaloids and their congenes, the resins, glucocides, etc., will be the preparations on which we will depend.

Concerning the antitoxins I have nothing to say for the reason that since their introduction into medical practice I have not seen a case requiring their use, nor have I known of but one case within the range of my practice during the last nine years. There are, however, some of the newer preparations which are deserving of mention, but the vast majority of "ones" and "odes" and "tones," the literature of

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which comes to our tables by the bushel, are not worthy of a moment's consideration, except as they choke up the drafts to our stoves and furnish an opportunity for the use of a few elegant "cuss words." There are two of the nerve products which I would mention, and they are adrenalin chloride and chloretone. I have not had an opportunity to test chloretone in all the relations in which it is recommended, but certainly as a hypnotic it deserves high rank. I have tested it with all kinds of people and under many circumstances and have always found it reliable and so far as I can yet see it produces no ill effect.

Of all the remedies for hay fever and nasal catarrh, so far as I have been able to test them, adrenaline chloride takes the first rank. So far as I have been able to test any remedies for this, one of the most distressing complaints to which the human family is heir, I find no remedy nor combination of remedies which are worth mentioning in comparison with it.

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Sanitary Water Analysis and What Can Be Learned Therefrom.

By D. D. Grout, M. D., Waterbury.

Mr. President and Gentlemen:—"Life and health may be regarded as the sum of all good to the human race." The health, happiness and prosperity of mankind must be intimately and inseparably connected with, and dependent upon, their sanitary condition.

Upon this to a great extent rests the foundations and superstructure of our national well-being. Men perish from bad air, impure water and unwholesome food, because they are ignorant of that which constitutes the danger in these essentials of life. They prefer to be governed by their appetites and passions, rather than to be controlled by reason and hygienic laws that must be obeyed or the penalty of disobedience be incurred.

Our occupations would be diminished in an essential degree if the art of preventing disease was thoroughly understood and universally practiced. The people are slow to apprehend the danger that arises from trivial causes, and from habits of life in which they have indulged for years, because they are unable to trace any direct connection between obscure and indirect causes and positive results. They are also unwilling to accept the fact that disease and death may result from their own carelessness and uncleanly practices.

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The excessive civilization of modern times, the esthetic-ism of the age have blinded our eyes and perverted our judgment, and led us astray from the habits of primitive times that gave our ancestors more vigorous constitutions and more stalwart frames than we of this generation can boast.

The subject of preventative medicine is one in which all are interested and intimately concerned, and I rejoice to know that competent medical men are making the most scrutinizing investigations in relation to sanitary questions, and recording the fruits of their labor for the benefit of the people. Never before in the history of this country were the people and the profession so much aroused to a sense of their situation and danger, and an earnest seeking after a radical reformation in relation to the practical applications of knowledge to the affairs of life. I trust that the time is not far distant when a large class of diseases which now afflict the human family will be eradicated, or so far mitigated in their severity and danger as to be comparatively harmless.

The sanitary condition of drinking water holds a front rank among the influences which determine the healthfulness of a locality and its inhabitants. It needs no argument to prove the disastrous effect of contaminated water when taken into the animal economy. By contaminated, I mean particularly water affected by sewage and excremental filth, although it is quite possible that water polluted from other sources, as from decaying vegetable matter, may be deleterious to health. Just as sewer-air may escape undetected into living apartments, its presence betrayed by no foul smell, and meantime do its deadly work in slowly poisoning the frail bodies of its victims, so may well water be

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taken into the body repeatedly, the consumer never suspecting, from its odor, appearance or taste that it contains the potency of disease.

A water, rank with the smell and taste of vegetable decomposition, may be shunned as unfit for use, yet another water, though of pleasing appearance and taste, may be for that very reason more deadly in its working. It has been proven by too many authentic instances to admit of doubt, that typhoid fever may be communicated by water into which have percolated through the soil dejecta from an infected patient, although the privy vault or other place of deposit may have been some distance away. The deodorizing properties of the earth have often availed to make such water not unpalatable. The abominable and criminal carelessness in disposing of refuse, which is so often seen by all of us among people who know better, as well as among those who do not, needs no comment. But in our larger villages of many years' standing, where there is not a system of sewerage, a condition of soil is liable to exist which is full of danger, and which because of its gradual development, is apt to be overlooked. I refer to the continued soaking of animal and vegetable filth into the soil upon which the town is built, owing to the multiplication of cess-pools and surface drains, until, after many years, the whole ground has become infiltrated with organic products of foul origin. In such a soil well water can no longer be depended upon for purity, even though there be strict regard paid to the separation of the well from places of waste deposit. Eventually pestilence will visit such hot-beds of disease, and many theories but the right one will be advanced to explain a so-called terrible "visitation of Providence."

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Diphtheria and scarlet fever, in such communities, assume a malignant type from the first, and linger long without abating, whereas, had the hygienic surroundings been good the above mentioned diseases might have existed, but not in so destructive a form. The utter disregard of all rules of hygiene and even of decency, which is too frequently seen in the discharge of the refuse of a city into the same body of water from which that city or a near neighbor receives its supply of drinking water, is beginning to receive the attention which its importance demands. A few more epidemics of disease, and a large mortality list, it is to be hoped, will secure appropriate legal enactment to control such actions on the part of the corporations. Although it is not at present possible to assign to every impurity in water its exact share in the production of disease, or to prove the precise influence on the public health of water which is not extremely impure, it appears certain that the health of a community always improves when an abundant and pure water supply is given; and, apart from this actual evidence, we are entitled to conclude from other considerations that abundant and good water is a prime sanitary necessity.

During the past four years my attention has many times been called to the fact that private individuals and corporations who have expended comparatively large sums of money for the purpose of installing water supplies that were at times, or should have been, all that one could have desired, but upon investigation have proven to be not only contaminated, but actually disease producing. And this, notwithstanding the owners and consumers were firm in the belief that every precaution had been taken to secure pure water and that their supply was of that character.

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There seems to be no excuse for the farms and villages of Vermont being supplied with anything but the purest water; with the hills and mountains that cover a large portion of the State, whose slopes are dotted with innumerable springs from which flow an unlimited quantity of bright, pure, sparkling water.

I have been surprised to find that the supplies from what were originally sources of this kind were, in a majority of instances, badly contaminated, the contamination being almost invariably caused by conditions that could be easily remedied, if a knowledge of the defect existed. Since the opening of our State laboratory, I have sent 74 samples of water there for analysis. These were collected from 47 different sources; 63 of these samples were from springs or from water systems fed directly from springs; 7 from wells; 2 from ponds, and one each from river and brook. All from which domestic supplies, either as water or ice, were taken. Forty-six of the 63 samples from springs were pronounced O. K., but water from 25 of the 47 different sources of supply was condemned, or pronounced suspicious; 4 of the 6 wells were condemned. All of the samples—4 in number—from ponds, rivers and brooks, met with a similar fate; 15 of the samples from springs were pronounced "unfit for domestic use." About 2,000 people received their water supply from the 47 sources before mentioned.

As proof of the benefits derived and information gained from sanitary water analyses, and that one analysis from each source is not sufficient, but that the price of sanitary water is eternal vigilance, allow me to recite a few instances that have come under my observation.

A widow, owning a large farm, finding that her water supply was inadequate, found on her farm a large spring,

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capable of furnishing an ample supply. The spring was located on a hill-side, in a partially wooded pasture, high above any human habitation. But being possessed of a more than usual amount of judgment and foresight, she asked to have an analysis of the water made before expending her money. Sample No. 1 was sent to the laboratory. Report: "Contains colon bacilli and is unfit for domestic use." Where, O where, did the bugs come from? Thinking it possible that the water might have been contaminated by cattle in the pasture, the spring was cleaned and the cattle excluded, and sample No. 2 sent, and the same report returned as before. Thinking that the laboratory staff might continue to find bacilli there, in order to sustain their reputation, I sent sample No. 3 under a different name and with samples from other sources, but the report was the same.

We then began a thorough and careful search for the origin of the trouble and were amply rewarded by finding about six rods above the spring, well buried in the ground, a cart-load of bones and offal, buried there several months before by a gang of Italians employed in the construction of an electric railroad, who camped near by and boarded themselves. There was nothing in the appearance, smell or taste of this water that would indicate anything wrong.

About five years ago our village expended $40,000 in a water supply, intended to be second to none. The supply was taken from springs on the "Hog-back" mountains, in Stowe, seven miles away. The springs were piped to a small covered intake reservoir, then piped to the village and the surplus went into a large open reservoir several hundred feet above this village, this to be used in case of low water or fire. August, 1899; May, 1900; June, September and November, 1901; January, May and July, 1902, samples were

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sent to the laboratory from intake, tap and storage reservoir, and all, with two exceptions, until the last, in July of this year, were pronounced A. No. 1, and our people rejoiced in the thought that whatever ills might befall them, none could come by way of the water. In June, 1901, the report from a sample from the storage reservoir was: "Biologically and chemically water is suspicious. The high percentage of albuminoid ammonia is indicative of decaying vegetable matter." This aroused the water commissioners to the fact that a storage reservoir needed cleaning, at least occasionally. In the summer of 1901, during a very dry time, it was found necessary to increase the supply, which was done, not by going to another spring as might and ought to have been done, but by taking in a small mountain stream that came from springs a hundred rods above. The report from a sample from this source says: "Chemically unobjectionable; biologically the large number of bacteria is suspicious." Thinking that the bacteria came from decaying leaves, and as the supply was only intended for temporary use, it was allowed to go. Samples from the intake reservoir and a tap in the south end of the village sent May 4, 1902, were pronounced all right.

Our village is unusually free from typhoid fever. For thirteen years there had been but two deaths from that disease in the village and two in the hospital, most of the cases being imported. In May and June of this year six people in the north part of the village came down with typhoid fever, with one death. Careful sanitary investigation failed to reveal the source of infection until we came to the water, which was least suspected. Samples from a tap in one of the infected houses, storage reservoir, intake and the supplementary supply which, by the way, had been allowed to

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be connected until a few days previous, although not needed, were sent for analysis. Reports from samples from tap and intake were negative, but from storage reservoir was "Chemically shows evidence of decaying vegetation same as sample taken from same place in June, 1901; biologically shows the bacillus coli communis." And from the supplementary supply: "Biologically and chemically suspicious."

Further investigation showed that the streams from which the supplementary supply was taken flowed past a plowed field that was fertilized in the spring from a large hennery and a privy, and this probably during the spring rains was washed into the stream, taken into the general system and carried into the storage reservoir, while a portion of it was deposited in branches that supplied the northern part of the village, without infecting the whole system.

Had the supply fallen short at this time, making it necessary to draw upon the reserve in the storage reservoir, which had become thoroughly infected, no doubt the infection would have become general and the disease widespread.

Another instance of a private supply, supposed to be all right until an analysis proved the contrary and an investigation showed that the water pipes were partially filled with partially decomposed frogs and snakes that had gained entrance through the absence of the usual strainer.

Several other cases I have observed where farm houses were supplied from springs, the water of which was supposed to be Adam's ale, but analysis proved the contrary, and when the condition of the water was brought to the attention of the owners they were able to discover and remove the cause of the trouble. In all of these instances it required an analysis of the water to demonstrate that all was not as it should be.

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I think that the people of Vermont are to be congratulated that they have, without individual expense, an opportunity to learn the character of their water supplies, and the individual or municipality that fails to embrace the opportunity will sooner or later suffer for their negligence.

People should first learn the elementary rules for selecting good water. In this respect, thousands of people of otherwise excellent intelligence make a serious mistake. The ideal drinking water of most people is the clear, colorless, sparkling water of a spring, refreshing in its coolness and satisfying the aesthetic sense by its suggestions of purity. So strong a hold has this ideal that it is most difficult to convince the average person than any water that has these characteristics can be other than wholesome and conversely that water lacking any of these qualities is suitable for human consumption. So, too, when town authorities have spared no pains or expense to secure a safe supply from a distant lake and have guarded it by all means known to science, the primitive habit of thought requiring colorless water of an even coolness of temperature leads many to cling to the old well in the blind faith of the savage that what comes out of the ground must be good."

DISCUSSION.

Dr. W. T. Slayton.—Just before leaving, I got some reports from the State laboratory, from six supplies. They are very interesting to me. I will read them: First one pumped from well, biologically is unobjectionable, chemically shows evidence of previous contamination, but is safe at the present time; second, tap from railroad spring, biologically is unobjectionable, chemically is suspicious, would advise a thorough examination of the surroundings; third,

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tap from Crystal spring, biologically and chemically is a good quality; fourth, tap from spring, biologically is unobjectionable, chemically shows evidence of contamination; fifth, pumped from a well, biologically is unobjectionable, chemically is suspicious; and sixth, tap from village water supply, biologically is unobjectionable, chemically is suspicious. I read these just to show some interesting reports. We have quite a number of cases of simple bowel trouble, diarrhoea, etc.

Dr. E. R. Clark.—We all feel indebted to Dr. Grout for his paper on this subject. It is without doubt a question of vital interest to us all. Our drinking supply comes from wells almost entirely, the soil being loam on top and a couple of feet below of a sandy nature and situated some seventy-five feet from the valley below. So far we have been exempt from typhoid fever, but we as well as other people should be on the lookout and such papers as Dr. Grout's calls to our attention the necessity and advisability of having our water supplies examined frequently.

Dr. G. F. B. Willard.—I wish to ask Dr. Grout a few questions. He spoke of the probability of infection coming from water running through fields that had been fertilized from a privy. I would like to ask if he traced that back to some typhoid case or whether there are typhoid germs in all fecal matter.

Dr. D. D. Grout.—I think the modern idea is that the bacillus of typhoid is thrown off not only in the feces but in the urine during convalescence. I did not attempt to trace the source of infection, for it would be impossible, for a person might throw off the bacillus without being aware of it. A person might throw off the bacillus of typhoid fever after they consider themselves perfectly well.

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Dr. H. D. Holton.—Dr. T. R. Stiles I think would have been here but as you know he is a member of the Senate and is one of the committee appointed to attend the funeral of our distinguished ex-Congressman Grout.

I would like to call especial attention to a point or two. It has been the purpose of the State Board of Health to have the public water supplies of the State examined three or four times a year. We have met with some opposition from the different towns with regard to this matter. The health officer, of course, who collects the water supply charges for his time as the law provides and some of the towns have objected to that expense and have said we have had our water supply examined last year and I don't think it is necessary this year. The doctor brought out the point that a hidden spring may show itself on examination to-day to be biologically and chemically all right and well adapted to domestic use, but an examination made three months from now under different atmospheric conditions, may show contamination. Two months ago I was called to a town where they had some sixteen or eighteen cases of a peculiar trouble, diarrhoea, chills and fever for a day or two. I accidentally discovered that one of the streams that supplied the village supply was contaminated by a dead sheep partly decayed. It had probably been killed by dogs and had rolled over into the stream. That water was examined last year and found to be of good quality and all right biologically and chemically. The result this time was all wrong. I speak of this to show the necessity of repeated examinations. We have had examples of burying the bacillus coli communis in earth to see if they would grow or not. The first two feet they died out in two or three weeks, the sunlight killed them. Down deeper, they had multiplied. If

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we bury discharges of typhoid fever patients we feel that everything has been done that can be. But recent experiences show that it is not correct, for the burying of discharges such as I have spoken of makes a source of contamination for our water supplies. All the discharges should be disinfected. The urine will contain the bacilli for months afterwards. How long they may remain in the body and produce activity and poison the system is quite a question. They may remain for a considerable period. The first case of typhoid fever that occurred in the Vermont Regiment during the Spanish war developed in a young man who came from a town where they had had typhoid fever for a number of years back. That young man left home with the bacillus encysted in his system, but living under different conditions from those he was accustomed to, opened a way for the bacillus to develop. He was the first victim in the Vermont Regiment from that disease. I hope all you gentlemen will try to enlighten your town authorities on the value of an examination of the water supplies. The laboratory is anxious to do it. They keep a record of every analysis done there, so if an examination of a certain spring is made during the month of August last year, with a good result, and the examination this year is suspicious, it is the duty of the health officer to look into this. It is the prevention and not the cure we are looking for in this instance. I think you can all do a great deal in this matter. Now, you often hear the remark: "What, you don't think this well water is bad, do you? My grand-father dug it and my father used it and I have used it and have never felt any bad effects." There was one farm which had two water supplies. Every young man who worked on the farm for the past eight years had typhoid fever and there had been

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three deaths. They had two hired girls; the mother of the house said: "Don't you think my girls would have typhoid if it was the water?" "Well," said I, "I suppose they drink milk or tea, don't they?" "Yes," she said. "Now," said I, "when the boys come in from the hay fields they are hot and don't they drink a dipper of the water?" "Yes." "Well," said I, "we will have the water examined." The examination shows that it contained the colon bacillus and was unfit for domestic use. We ordered it closed up and they have not had a case of typhoid fever there since That seemed to me to show plainly the cause of the trouble.

Dr. C. W. Peck.—I think it is very probable that typhoid patients throw off the typhoid bacillus for months afterwards. I have followed some of my patients three and four months and have sent specimens to the laboratory and have found that the blood often contains the typhoid bacillus. I think Dr. Olson has found that they are contained in the system for one year. I think that will show how these germs entered into the field and were washed into the stream.

Close of discussion, Dr. D. D. Grout.—I have nothing of importance to offer, but I should like to give Dr. Slayton of Hyde Park some encouragement. He says that the town authorities object to the expense. I can not conceive, I can not believe that in the old county of Lamoille, there is a man so blinded, so obtuse to his own welfare as to object to an analysis. When these people are drinking such water, they had better spend their energies in investigating their supplies rather than in objecting to the little expense they are put to in obtaining an analysis of their supplies. I think the whole trouble is that some one is chewing his nose off to spite someone else.

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The question arose as to one's coming immune from infected water. Whether the repeated drinking of contaminated water does not render one immune to a certain extent, I am not prepared to state. When we come down here and drink this lake water, some of us who are not immune suffer therefrom. I think some of the people in some of these towns have become so hardened and so immunized, that they will live forever.

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Diphtheria, with Special Reference to Complications and Treatment.

By J. H. Blodgett, M. D., Saxton's River.

Diphtheria is a hackneyed subject, and we feel almost like apologizing for presenting it on this occasion; but when we are confronted with the disease and the possibility of an edpiemic, it is no longer a hackneyed subject but a serious matter.

The importance to all concerned of an early diagnosis urges us to be definite, quick and sure in our councils and treatment.

To the health officer (and many of us here are such), these remarks apply with double force, for he has sometimes to meet with decided opposition within and without the family.

From a legislative view point the subject is of great moment just now. These legislative possibilities have mainly influenced the writer to choose it for this occasion. Many of you are familiar with the resolution passed at the annual School for Health Officers asking the State to furnish free antitoxin. The writer is a firm believer in State antitoxin. If we have favorable legislation, it must be by interesting our senators and representatives in the cause, and we all may have a part in the work.

Diphtheria is defined as a highly contagious disease, characterized by fever, usually a pseudo-membranous inflammation of the pharynx and often by symptoms of toxae-

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mia due to the presence of a specific bacillus whose growth produces the poison which is absorbed.

The etiology is now very simple, the Klebs Loeffler bacillus being the immediate cause. There can be no diphtheria without it. Imperfect drainage, filth and insalubrious conditions do not produce diphtheria and McCollom states that such conditions do not materially increase the disease. Diphtheria having been found more prevalent in localities where no fault existed in the hygienic surroundings than the reverse. Predisposing causes are those which impair the vitality of the mucous membranes, and need not be mentioned here. The morbid anatomy will be considered as we review the types of the disease.

Without following any author's classification, the types of diphtheria proper fall clinically into three classes, with no very sharp line of demarcation between them.

1st.—The positive culture cases.

2nd.—Cases of moderate severity with a membrane. These are the forms of the disease seen in the country.

3rd.—The severer cases.

This class needs to be sub-divided into at least three divisions. A. Cases with violent reaction. B. Cases with marked depression. C. The laryngeal type which must be further divided for treatment at least, into those that require intubation and those which do not. A fourth class should be mentioned, namely, mixed cases, diphtheria complicated with other contagious diseases.

Reviewing the types more briefly, we note in the positive culture cases a condition which, while not necessarily dangerous to the patient, may become so to others.

The possibilities are well illustrated in a series of three cases which occurred in the writer's experience last year.

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A rugged Irish girl was assistant cook in a private school. She prepared the trays which were sent to the sick. A student, a delicate girl, carried these trays from the kitchen to the girls' dormitory and returned the same. An epidemic of la grippe brought the two in frequent contact. The cook had a sore throat a month previous to examination which showed the mucous membranes red and swollen, a thin film of mucous on the pharyngeal wall. Applications to this removed it easily, but there was slight hemorrhage, a very suggestive fact. The glands at angle of jaw were enlarged and tender, pulse rapid and the patient anaemic. Cultures showed abundant Klebs Loeffler bacilli and she was isolated. One thousand units of antitoxin cleared the throat. No cases developed in the strong women who worked about her.

In a week the girl who carried the trays was ill and had been so for several days when seen. She presented the same clinical picture, but with prostration and temperature at the end of a week's illness. There was no membrane but a suspicious throat and pronounced nervous symptoms. Antitoxin was promptly given and cultures later showed diphtheria bacilli. Recovery was immediate, but convalescence slow.

The student's room-mate had been promptly isolated and she as promptly came down with the disease. The symptoms were again the same, but the period of incubation was shorter and that of invasion also. A distinct film could be seen on the tonsils and prostration was so marked that the patient was unable to sit up for examination of the throat. Immediate and repeated doses of antitoxin controlled the disease. The nervous symptoms were marked, the patient at times became hysterical. The progressive severity of the

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disease is to be noted with the decline in resisting power of the individual patient.

These cases were surrounded by boys and girls ill with la grippe and colds, many of whose throats looked far worse. The points of differentiation were these:

1. Obstinacy. These throats would not yield to treatment.
2. A tendency to serous oozing where membranes touched.
3. Enlargement of the glands.
4. Patients seemed ill and little cause was to be found.
5. Pronounced nervous symptoms.
6. Practically no temperature.

This class of patients are the nuclei for epidemics which may become virulent in type. There are two points of interest in the treatment. First, antitoxin shortens the duration of the infective period; 2nd, experience at the Boston City Hospital showed that local applications to the throat not only were of little service, but may become a positive injury. The fact is well known that the bacilli can not multiply on a healthy mucous membrane. Anything which impairs the vitality of a mucous membrane, as strong applications, promotes the spread of the germs, with characteristic effects.

In cases of moderate severity the symptoms may arise in two days after exposure. A chill, followed by pyrexia, is common. Pain in swallowing is usually first noted, headache, backache, pain in the legs, anorexia and weakness follow. Examination of the throat may show only the positive culture condition, but the formation of a false membrane, first as grayish-white spots and later the membrane is characteristic of this type. It is to be remembered that the

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membrane may be anywhere from the anterior nares to the alvioli of the lungs and hence overlooked; and again that very little reliance can be placed on the appearance of a membrane. The urine may show albumen.

The severest forms show the above symptoms intensified, the membrane spreads with alarming rapidity until it may involve practically the whole respiratory tract, although this is very unusual. Membrane may appear on the conjunction of the eye, and the mucous membrane of the vagina. In the robust there may be marked reaction to the invasion of the poison, as shown by the bounding pulse, high temperature, a skin bathed in perspiration, violent lumbar pains, rapid and noisy breathing. The patient is commonly delirious, but may be stupid, gastro-intestinal disturbance may be present, a thin yellowish secretion runs from mouth and nose, especially during sleep. The tongue is dry and fissured. The glandular swelling is generally extreme. The urine contains albumen and a variety of casts.

In the weak, or where treatment has been tardy, we have depression. The patient is cyanosed, and the skin cold, including the extremities, the pulse is weak and rapid, the patient lies in stupor, the yellowish secretion from mouth and nose becomes sanguinous, the breathing is noisy. The membrane is dark in appearance and possibly very thick, the odor is diagnostic, the glands often break down and require operation, sloughing of tonsils may occur, the temperature is not high and often sub-normal, the heart may have become irregular from degeneration of the pneumogastric and the stomach refuse to do its work from the same cause. Paralyses of various sort develop. These are the cases that call for action.

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The laryngeal type is the most serious because obscure. The symptoms of obstruction usually are slight at first and we think of simple croup and of that old fallacy,membraneous croup (90 per cent. of which is diphtheria) until the situation has become critical.

Hoarseness and symptoms of laryngeal irritation are first noticed, there is a peculiar dry breathing, the child becomes restless, there is noticeable cyanosis, exposure of the chest shows the recession of the soft parts above the clavicle and below clavicle and sternum, the abdominal muscles partake of the struggle, there is an anxious expression to the whole face, the skin and extremities are cold and the pulse generally rapid and weak. Intubation is the operation of election. I have never seen a case of tracheotomy recover.

The fourth or mixed types, diphtheria with other contagious diseases, can have but passing notice. The fact must be recognized that two acute infectious diseases may exist at the same time, in the same patient, and each run its typical course. My colleague, as house physician, had both scarlet fever and diphtheria simultaneously with 38,000 units of antitoxin and typical desquamation lasting six weeks.

Measles and diphtheria give us a most dangerous combination, for the membrane spreads with alarming rapidity on the irritated respiratory mucous membrane. The anaemia resulting from combination with chicken pox reminds us that there are no simple diseases, all have far reaching consequences.

The degeneration of the walls of the blood-vessels in extreme cases gives anxiety when we have the severe paroxysms of whooping cough as a complication. Cerebral hemorrhage also occurs.

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Considering now the treatment of the regular types (other than antitoxin), we have already touched on the treatment of positive culture cases. Passing to those of moderate severity, isolation of the patient is the first duty to record, absolute rest in bed for the mildest cases even, a liquid diet when pyrexia exists. Ice bag to head and ice collar to throat if glandular swelling requires, irrigation of the throat with a saline solution containing a little tincture of myrrh, and strychnine to combat depression, is the ordinary routine.

Alcohol in the severe cases must be used, and in extremity pushed to the limit both by mouth and rectum. Other regular heart stimulants must be used until sufficient antitoxin has been given to neutralize the poison.

Irrigation of the nose or nasal feeding is to be avoided because of the danger from infecting the middle ear and thence to mastoid disease. The writer has seen hydrogen peroxide check a hemorrhage from the nose when all else had failed. Adrenalin chloride should be thought of in this connection. External heat must not be forgotten in depression cases.

In laryngeal cases we have seen steam and syr. ipecac clear up many a case with liberal doses of antitoxin. Intubation should not be delayed until the child is well night exhausted. Oesophageal feeding is to be preferred to all other methods and should be given at four hour intervals, containing both liquid nourishment and medicine.

In all cases antitoxin is the great remedial agency, and should be given to effect, regardless of the amount taken. This will receive full discussion later.

The complications of diphtheria due to the action of the toxin on various tissues are very important, and it must be

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said are often under-rated by the profession. A man drops dead in the street to-day. One of us drops while performing, say a surgical operation, which calls for much nervous tension. There is nothing in the history we say which could have produced chronic heart disease. Ah! but did you record that severe attack of scarlet fever or diphtheria he had early in life, which was so slight the parents thought a physician not necessary, or the physician thought of so little importance that he let the child out of bed in three days. The day comes when that record calls for a valuable life, with a grand work yet unfinished.

The fact cannot be too strongly emphasized that a daily examination of the heart (with a stethoscope, the naked ear amounts to nothing) in every severe case of diphtheria is as plain a duty as God ever gave to man. Every inch of that heart area should be gone over, and particularly when the patient is first allowed to sit up. The old hospital records are full of cases where sudden death was common and the cause not understood.

The heart complications fall mainly under two heads. First, the degeneration of the heart muscle itself (to be described later); and second, the degeneration of the pneumogastric nerve giving the Bruit de Galop and allowing the heart to run away with itself.

The stomach suffers from the same degeneration and in this critical condition we may have to resort to rectal feeding alone, even then we may hope.

John Jenks Thomas and Cleon Melville Hibbard have studied heart failure in diphtheria exhaustively; they say: "The pathological conditions found consist of two varieties. First changes in the nerve structure; second, changes in the heart muscle itself.

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The changes in the pneumogastric nerve were always those of a degenerative process—acute in course, as shown by the breaking up of the myelon.

Dr. Councilman sums up the degeneration found in heart muscle as follows: "Degeneration of the myocardium is one of the most common conditions found in diphtheria. The simplest form is fatty degeneration found in the majority of all cases, this may be general or occur in foci. It precedes and seems to accompany the more advanced forms. Fibroid myocarditis may occur from extensive formation of connective tissue. Thrombosis is not an uncommon condition due to necrosis of the endocardium."

The condition gives us the systolic murmur, the irregular action in part, the dilated heart and the sudden death, when from that cause. It is present to a greater or less extent in every case. The summary of Drs. Thomas and Hibbard is:

1. About one death in five in diphtheria is due to heart failure.

2. This is a more frequent cause of death in children than in adults.

3. The first sign of heart failure usually appears during the second week of the disease.

4. A slow pulse is a more common symptom of serious cardiac trouble than a rapid one.

5. There is gradual degeneration of the heart muscle in these cases, accompanied by edema and intestinal infiltration, to which is due the increased weight of the heart.

6. There is a very constant change in the pneumogastric nerve as well as elsewhere in the nervous system in cases of diphtheria.

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7. Probably the cases of sudden death are due to the effect of toxic substance produced in the disease upon the nerve structure of the heart.

8. Patients who have weak, irregular or very slow or very rapid pulse, a dilated heart with a systolic murmur at the apex, a Bruit de Galop, a reduplicated second sound, a paralysis of the palate or vomiting should be considered especially liable to heart failure, and therefore extra precautions taken to prevent the same.

Dr. Hibbard, writing on eight hundred cases of diphtheria at the South Department, including our service of 150 patients at that time, summarizes thus:

1. A rapid pulse in diphtheria is to be dreaded, death usually results when it exceeds 150.

2. A slow pulse, 60, in young children is a sign of serious trouble.

3. Irregularities occur in about 10 per cent. of the cases and generally signify cardiac complication. .

4. A systolic murmur is heard at the apex in 10 per cent of the cases.

5. A Bruit de Galop in diphtheria is a most fatal sign.

6. After four weeks with no heart symptoms they are not likely to occur.

7. The cause of death is usually from cardiac thrombi, dilatation, or paralysis, produced most probably by the toxin of the diphtheria bacillus.

The treatment is simple, rest in bed and general tonics—the special heart tonics if required.

The kidney complications are not so important, but need mention. The urine in diphtheria is distinctly reduced in volume, of high specific gravity and of sharply acid reaction. It deposits a copious sediment in which uric acid, am-

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orphous urates, oxalates and sometimes phosphates abound. Albumen is present in over 50 per cent. of the cases. If the kidney itself becomes involved it is usually in the form of acute nephritis with its accompanying symptoms, at the height of the disease the urea is much increased. When we have nausea and vomiting with any tendency to scanty urine the urea should be carefully followed to differentiate paralysis from a beginning acute nephritis, in which latter cases it would be much diminished of course.

In the severer cases, especially moribund, casts of all description are found and often the finding of a waxy cast early gives one the first indications of beginning disintegration. The important matter here is, first, routine examination of the urine at the outset and during the progress of the disease; second, proper treatment of the condition when found. This involves rest in bed, liquid diet, abundance of water, and careful attention to the skin. Drugs are not needed and may do positive harm.

Paralyses.—The paralyses occurring most often in the writer's experience was the naso-pharyngeal type. Indistinctness in articulation is followed by regurgitation of liquids. Inability to swallow is uncommon, but there are cases when oesophageal feeding has to be practiced until there is partial recovery.

Occular paralyses are reported more frequently than formerly. The paralyses following degeneration of the pneumogastric are very critical and the disturbance of the heart and digestion have been fully described. Patients do recover with a Bruit de Galop as a result of the increased dosage of antitoxin, thus not allowing the action of the toxin for so long a time. Dr. Theobald Smith tells me that in the laboratory experiments he finds that the rabbits usually

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recover if the phrenic nerve is not involved, i. e., the respiration affected. Affectation of the phrenic is not a common thing, certainly, and not seen unless the case is very well advanced. More general paralyses occur but there is the encouraging thought that they nearly all recover. The routine treatment for this condition is rest in bed, concentrated nutrition, strychnia and iron.

Other complications, ear and chest, for instance, are important, but the limit of this paper will not permit of their discussion.

Antitoxin.—The discovery of the antitoxic properties of the blood of immunized animals by Behring and Kitasato in 1890 was the signal for the renewed study of diphtheria toxin which Roux and Yersin had demonstrated earlier. Fourteen years ago a vague knowledge of the existence of bacterial poisons was all we possessed, of the existence of antitoxin there was not a hint. To-day we know something, not only of the host which advances to destroy the human race, but also and better, of the forces which may be hurled against them for the preservation of life, and yet how often it is said: "Medicine makes no progress." How few remember that medicine deals with the mightiest and about all the problems under the sun. Investigators are at work in the fields of toxins and antitoxins and another ten years may startle us with its possibilities.

That the toxin of diphtheria is a variable quantity is well known. A comparative study of 40 cultures by Dr. Smith from different towns in Massachusetts, under uniform conditions showed that some bacilli produced two or three times as much toxin as others in a given time. This is a fact of great bearing in the dosage of antitoxin and its action on the human economy. It explains why we can not

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determine accurately the dosage and why tremendous amounts may be given at times without the slightest harm to the patient.

We cannot go into the history of the action of antitoxin. It is sufficient to say that antitoxin is being considered, a definite chemical compound and the toxin of diphtheria a second, the one neutralizes the other; hence so long as the toxin of diphtheria is in the body,or is being produced just so long is more antitoxin required, regardless of the amount already given. Dr. Smith tells me that his work rests on this chemical hypothesis and the theory has a practical working basis. What the chemical composition of these fluids are is still problematical.

So much for the action of antitoxin. Passing to the more tangible, the production of antitoxin as seen at the Massachusetts Station, the first stage is the production of the diphtheria toxin, and we have:

A, preparation of the bouillon; B, inoculation of the same; C, filtering and storing for future use.

Second stage—The horses.

A. Each horse treated with minute doses of toxin, cubic centimeter for two or three months. The injections are made in the neck.

B. Blood is drawn from the jugular and tested from time to time when the serum is up to a standard of 200 units, then about five liter are drawn.

Antitoxin.—A. Horses are bled about once a month, the clotting and formation of the serum takes about twenty-four hours.

B. The serum is filtered and chloroform added as a preservative. All this work, of course, is done under the most rigid aseptic precautions.

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The Massachusetts Station has at present seven horses and has had as high as fourteen. Dr. Smith is the head and the only expensive salary involved. There are three woman helpers and one man for the care of the horses. Such a laboratory could be economically carried on by our State Board of Health. We have the men, the laboratory, and its equipment. All we need is training in this work; a few horses, and a little cold cash from the State treasury.

Dr. McCollom, of whose experience you all know, says of State antitoxin:

1. It is of better quality.

2. It is used more freely in the early stages of diphtheria, which is the golden opportunity.

3. It is used for the purpose of immunization if so supplied, when under other conditions it would not be; thus making a material reduction in the number of cases.

4. The average man is not able financially to buy antitoxin, and hence his children may die, if not from the lack of antitoxin, at least from the delay in securing it.

The Massachusetts State Board of Health have made an exhaustive study of the benefits derived from State antitoxin and by courtesy of Dr. Morse I am able to summarize some of them. In Massachusetts, before State antitoxin, years '91 to '94, the fatality was 28.3 per cent, with State antitoxin, and at the Boston City Hospital, years '95 to 1902, it was 13.6 per cent. per 10,000 of the living.

The death rate during this latter period, of antitoxin given in the first two days of illness, was 6.6 per cent. If antitoxin was not used until the sixth day or later, 17.8 per cent. The State Board estimate the number of lives saved in seven years as 10,697. The following shows the number

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of deaths with antitoxin and what it would have been without antitoxin for the seven years:

	With.	*Without.*
1895	1784	2670
1896	1677	3143
1897	1426	2862
1898	706	1513
1899	1047	2554
1900	1475	4093
1901	1166	3142

The death rate per 10,000 of population in 1901 from diphtheria and croup was 4.1 per cent. They estimate that if antitoxin had not been used it would have been 10.9 per cent.

Compare for a moment our record in Vermont, where practically only the cases of moderate severity are seen. The number of cases reported to the Secretary of the Board of Health was 229 in 1901, the number of deaths 32, making an actual death rate of 14 per cent. or slightly less. Do these figures mean anything for us?

Why does Massachusetts lead us? Because they use antitoxin, early, freely, and in large doses. In 1898, when the writer entered the South Department, 2,000 units three times a day was the limit. Now they use initial doses of four, six and eight thousand, at four or six hour intervals; 112,000 units and more have been given with recovery to the patient.

Dr. McCollom, in a recent article in which he compares the work at the City Hospital with five of the largest and leading hospitals of the world, shows that he has the world's record in actual death rate, and this due to large doses of

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antitoxin. It seems to the writer that we in Vermont can not afford to be behind in this matter, when we lead in so many other important lines of work.

DISCUSSION.

Stanton S. Eddy.—I am sure we are all very much interested in Dr. Blodgett's paper. It was interesting because it dealt with practical experience. Certainly the complications of diphtheria are very common and the per cent. of complications compared with other diseases is very high. The most common ones are those of the heart, meningitis, endocarditis, paralysis, peritonitis, skin disease, disease of the kidney, and may I add anaemia and septicaemia.

I might illustrate a case which occurred at the hospital which shows how careful we should be in releasing patients. An officer was in the ward for ten days, with only a moderate case and after a negative culture was released and let go to his room, and after the second day at his room, one of the house officers in an adjoining room heard a noise and going in there, they found him on the floor, where he had fallen from weakness of the heart.

Coming to the treatment, I think we should consider the preventative treatment, the careful isolation of all cases and have this quarantine continued until we are certain of two negative cultures. I think cases often arise from others which were not quarantined long enough.

With regard to stimulants I find that alcohol and strychnia are preferred to digitalis. It has been found that strong applicants do not hasten the disappearance of the germs.

We now come to the subject of antitoxin. It seems to me that this matter ought to be with us as it is with Massachusetts and other States. I wish, by legislation or other-

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wise, it might be possible for every patient, no matter how rich or how poor, to be supplied in time of need. I think we are all impressed with the Doctor's suggestion that we should have free antitoxin in our State. I believe it ought to be in the hands of the State Board of Health. We have a most efficient laboratory under the State Board of Health, where outfits for the taking of cultures are distributed to us, and I think antitoxin should be supplied in the same way—if not free, at small expense. I can see difficulties. The need would come spasmodically and a great deal would be wasted. But I think at least arrangements should be made with the manufacturers so that we could have it at wholesale prices. The expense ought not to be over a dollar for a thousand units. I wish this might be taken up and put in the hands of the State Board of Health. Statistics give us a death rate of 20 per cent. That is too high. I think by proper methods it might be much reduced, and I hope it may be.

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The Diagnosis and Treatment of Incipient Pulmonary Tuberculosis.

By H. Edwin Lewis, M. D., Burlington.

Of all the facts determined by the recent widespread study and discussion of tuberculosis, none is more certain than that the chief hope of the consumptive rests on the early recognition of his disease. The importance of early diagnosis and treatment cannot be questioned, and a large share of the lives that have been sacrificed each year to tuberculosis must be laid to the lamentable fact that proper treatment has too seldom been inaugurated in the first stages. Undoubtedly the principal cause for this has been carelessness on the part of the patient in presenting himself for treatment, but there certainly have been enough other cases whose condition has not been recognized by their attending physicians until too late, to warrant the statement that the medical profession have not been entirely free from responsibility in the high death rate from this disease. Every painstaking physician who has given any special attention to pulmonary tuberculosis is aware of many an advanced case that has come into his hands from other medical men, but whose true condition none the less has apparently never been recognized. Too many patients have been treated for bronchitis and catarrh, when a careful physical examination and sputum analysis would have demonstrated a much more serious state of affairs. Such cases and their comparative frequence is my excuse for this protest; they are not only a dis-

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grace to our profession, but too often an evidence of neglect. A surgeon who mistakes a dislocation for a fracture is amenable to the law and is often called upon to answer for his lack of skill and care. Why not then the physician who neither recognizes the condition of a tuberculous patient, nor avails himself of accepted methods of diagnosis until too late? The incompetence of the surgeon seldom means more than permanent inconvenience, but that of the physician is not only disastrous to his patient, but dangerous to countless others. Failure to recognize and warn a patient of the danger from a careless disposal of his sputum, in most instances is a greater wrong to the public than to the individual.

With the facilities of modern methods of diagnosis, especially the aid given us by the microscope, there is, therefore, less excuse than ever before for failure to recognize tuberculosis, and one writer has gone so far as to suggest that the time will come when a tuberculous patient, as well as the State, will have an action at law against a physician who fails to diagnosticate the disease within a given time. While we can hardly expect this, a physician who neglects to use due care and vigilance in determining tuberculosis should be liable for his negligence.

The diagnosis of incipient pulmonary tuberculosis can never be absolutely made from one symptom alone. A number of facts, only derived often times from observations extending over a period of several days, must be taken into consideration in forming an accurate conclusion. Of these facts, the principal ones are those obtained from careful inquiry in regard to the temperature, pulse, cough, weight, digestion, physical condition of the chest, and repeated examinations of the sputum.

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Interrogation of the temperature is one of the most valuable aids to diagnosis. Not that its absence precludes tuberculosis, but that an unaccountable rise of one to three degrees some time in each twenty-four hours is pretty certain to indicate the presence of a tuberculous process.

I am convinced from cases that I have been able to study in early stages that the earliest and most positive symptom of tuberculous infection is variation in the temperature range. The presence of one degree above normal any time within twenty-four hours without evident cause, is most significant and should always excite suspicion of incipient phthisis, as well as prompt careful search for other symptoms.

It is useless to form an opinion from the perfunctory night and morning record. The elevation of temperature may vary in the time of its appearance in different individuals, or even in the same individual, showing itself at different hours of the day, and in some cases only on the second and third day; but if a tuberculous infection is present, a careful two or four hour record of the temperature from 6 A. M. to 10 P. M., covering one week's time, is quite certain to demonstrate a slight rise sometime during the period, with an occasional fall to subnormal. I am in the habit of loaning an accurate thermometer to intelligent patients, with directions to keep a careful two or four hour record of the temperature while awake. The results are often very significant, as I have many times determined the presence of fever by this method, when a simple examination at my office would have been valueless.

In 106 cases that I have been able to observe or obtain accurate data from during the early stages, 90 showed a rise of temperature during the twenty-four hours of each day;

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seven showed a rise on alternate days, and in nine, a record of increased temperature was not obtained at all, though a drop to subnormal was frequently observed. Subnormal temperature some time during the twenty-four hours of each day was noticed in 73 of 105 cases. The time of day at which the highest temperature was recorded was between 2 and 6 o'clock P. M. in 82 cases. The lowest or subnormal temperature was between 5 and 9 o'clock A. M. in 64 cases.

The pulse may give another significant symptom of incipient tuberculosis. It is, as a rule, increased in frequency, but decreased in force and tension. A pulse rate of 88, 96, or even 120, out of all proportion to the temperature, is not uncommon. In 59 out of 64 cases a pulse rate of 88 or over was observed.

Next to rise of temperature and an increased pulse rate, the most valuable symptom is cough. It may be slight, indeed so slight as to escape the patient's attention, but careful inquiry from other members of the family will almost invariably elicit the information that there is a little cough in the morning, and occasionally during the night. The cough may be dry and just a little hack, but it is quite constant early in the disease. The patient's testimony should not be taken as final in regard to the cough, for I frequently have them come to my office and assert that they are not coughing at all, when it has been sufficient to attract my attention. It is not necessary that the cough should be paroxysmal, indeed the characteristic cough in the incipient stage is free from spasm, being simply an effort to relieve a slight though persistent bronchial irritation. Expectoration is rarely an accompaniment of cough until the lung or bronchial tissue begins to break down, or when considerable catarrh of the air passages is present. It may, therefore, show itself early or

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late, depending upon the condition of the respiratory organs, and the extent of the process.

Gradual but progressive loss of weight is another important symptom taken in connection with the foregoing, and is usually proportionate to the digestive and assimilative disturbances which are so constant and important factors in the etiology and course of pulmonary phthisis.

Hemoptysis is a symptom which may prove of the utmost importance, but it has been by no means of common occurrence in the incipient stages of cases that I have been able to observe. Real hemorrhage from the lungs has occurred during the early stages of only 23 per cent of 194 cases that I have been able to collect reliable data from. It would seem that hemorrhage is rather more of an indication of the extent and location of the process in the later and ulcerative stages than during incipiency. Blood streaked sputum is common in the early stages, however, and of considerable significance.

In regard to physical signs, I shall say little, for it must be confessed that they are neither constant nor well marked in the early stages of pulmonary tuberculosis. A careful examination of a patient on several successive days and in different postures, however, will usually give a careful diagnostician considerable information. A prolonged expiratory murmur on auscultation, and slight percussion dullness at either or both apices, just over or above the clavicals with some increase in vocal fremitus, are the earliest and most important of the physical signs of incipient phthisis. Often crackling rales at either apex are very significant. They occur at the end of inspiration, and many times can be distinguished from the normal crepitant rale with difficulty. Having the patient lie on his back will frequently accentuate

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them, and they can usually be caused to disappear by coughing. The rhythm of respiration is frequently changed and the rate may be quickened to 20 or more per minute.

Of the further symptoms of pulmonary phthisis, notably the anemia, night sweats, debility, shortness of breath, sinking spells, and the alternate constipation and diarrhoea of the average case which all go to make up the symptom complex, I shall say nothing. They are too well known to require attention.

I would like to refer, however, to two other minor symptoms which I have frequently observed in incipient stages of tuberculosis, but which are seldom mentioned. One is a more or less marked and extreme dilatation of the pupil. The ciliary and pupillary reflexes are nearly if not quite normal, but on the least excitement or fatigue, the dilatation becomes unusually noticeable. The other is a tendency to hoarseness without apparent cause, ranging from slight huskiness to complete aphonia. Neither of these symptoms taken alone are of diagnostic importance, but considered with others they become more or less confirmatory.

Finally, careful and repeated examinations of the sputum should always be made as a routine aid to diagnosis. Since the detection of Koch's bacillus is of such positive value in the presence of certain pathologic conditions, a search for it is justifiable on the slightest suspicion. Many times the bacilli are not found in the sputum on the first examination, but it should be remembered that clinical experience has demonstrated that negative examinations cannot be considered final as long as a single suspicious symptom remains. In rare cases, the tubercle bacilli may be present, but from some chemical change, or tinctorial peculiarity, they may not stain by any of the known methods of staining.

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I have seen several cases that have never shown tubercle bacilli in their sputum, even to the day of death. But that the disease was tubercular was demonstrated by not only its course and outcome, but by post-mortem examination and inoculation experiments on lower animals. Therefore, while the microscopic examination of the sputum is highly important, and a valuable aid to diagnosis, the clinical symptoms and physical signs of the disease should be given due weight in every instance.

I feel certain, moreover, and my convictions have been justified by my own cases, that repeated microscopic examinations covering a period of one or two months will, with rare exceptions, almost invariably demonstrate tubercle bacilli if present, and the patient is not improving.

In regard to the use of tuberculin as a diagnostic procedure, while I cannot question or criticise those who recommend it so highly, I do feel that its use is fraught with more or less danger and inconvenience to the patient, to say the least. I cannot help but believe from my experience with it, both for diagnosis and treatment, that there are other safer methods for both purposes. A tuberculous condition obscure enough to require its use, can safely be treated on general principles or let alone until the disease is more apparent.

In regard to the treatment of tuberculosis, not alone in the incipient, but in any stage, it must be said that it is the stumbling block of most practitioners of medicine. The fault lies not in incompetence, but largely in a lack of confidence and interest in the subject, and an erroneous idea that there is a routine treatment for tuberculosis. The men who accomplish the most in restoring tuberculous patients to health, realize that there is no treatment for tuberculosis.

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They do, however, treat the tuberculous patient, and to the extent to which they study each case and adapt treatment to each individual patient, just to that extent do they obtain any measure of success.

The limitations of this paper prevent any extensive consideration of a subject which must obviously be open to so great modification and variation. What I may say, therefore, on the treatment of patients with tuberculosis will be of a general character and in no wise deal with details or special conditions.

The role, however, of failing metabolism in the etiology and progress of tuberculosis, and the arresting influence of its re-establishment gives us our most valuable suggestion for treatment. Restore the nutritional balance of the tuberculous patient (which means the establishment of digestive and assimilative equilibrium in not only the alimentary canal but in the circulation and fixed cells of the body), and the tuberculous process need cause little apprehension. Our means for doing this are an abundance of good air, in other words, ample oxygenation, good easily digested food, rest or intelligent exercise, depending upon the individual case, and wise medical treatment.

In regard to fresh air, too much stress cannot be laid on out-door living. Every patient afflicted with phthisis should spend at least ten hours a day in the open air. Purity of the atmosphere is the one great requisite of any climate suitable for tuberculous cases, and since an excessively humid atmosphere is never a pure one, we should choose location with a view of obtaining a minimum of humidity. Temperature, if not liable to sudden and extreme changes, is not a factor, but sunshine is, because of its purifying effect on the air and stimulating influence on all vital functions.

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A country residence is more suitable for consumptive patients than one in the city, from purer conditions of the atmosphere. In the country it is a simple matter, and entails little expense, to have a covered porch or veranda built with two sides completely open. Here the tuberculous patient should live day in and day out, and even sleep when the weather will permit. If conditions are not favorable for sleeping out-doors, the consumptive should spend his nights in a high, spacious room, occupied only by himself, and with one window always wide open. With plenty of clothes to keep him warm, he will sleep better, perspire less, and never run the slightest danger of "catching cold."

The question of rest or exercise is one on which authorities differ. Some recommend absolute rest, while others do not hesitate to advise a variable amount of exercise, both systematic and otherwise.

On general principles, the temperature range should be the index for rest or exercise. If the fever is high or continuous, absolute rest, preferably in the open air, should be enjoined. The rationelle of this must be apparent. In the presence of an acute febrile process, physical exercise means an extra tax on the vitality of the body, an extravagance the consumptive can ill afford, and almost invariably results in an aggravation of the symptoms and an extension of the disease. It is sound wisdom, therefore, to recommend a zealous economy of force as long as a single symptom of an acute process remains. But when neither the fever nor other symptoms point to an acute progressive process, and the vitality of the patient is not noticeably low, a certain amount of moderate exercise in the open air may prove very beneficial. Especially valuable are systematic breathing exercises calculated to increase the lung capacity. Almost with-

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out exception, the chest expansion of the average consumptive falls below three and one-half or four inches. If this can be increased to six or more inches, the benefits are usually marked and lasting.

Proper feeding is of next importance in the treatment of the tuberculous patient. The problem is not how much food can we get a patient to take, but how much can we get his body to digest and appropriate. A moderate amount of food, properly digested and assimilated, exerts a far more beneficial influence than the ingestion of quantities so large that the vital forces of a strong person would be overtaxed, to say nothing of one already weak and debilitated. Then again, the oxygenating powers of the average consumptive are markedly lessened, and to attempt to force a greater amount of food combustion than is physically or chemically possible, cannot mean anything but harm to the whole organism. In every instance the digestive apparatus and assimilative powers of each case should be carefully interrogated. The degree and character of the indigestion, whether of the proteids, of the fats, or of the carbohydrates, or of all, should be determined. If the proteids are not well digested, it is ridiculous to put a patient on an excessive diet of beef-steak, raw eggs, etc., and expect him to gain in weight and strength. Or, if the fats are not digested, it is quite as ridiculous to give a patient excessive amounts of cream, cod liver oil, and the like. The resources of his digestive tract alone should regulate his diet. If he cannot digest proteids, he should be helped in this direction by the administration of those pre-digested foods which are largely composed of peptones. If he cannot digest fats, what he does take should either be thoroughly pre-emulsified and pre-digested by the use of pancreatic extract, or their inter-

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nal use should be completely interdicted, and the necessary amount supplied by inunctions of coca butter, cocoanut oil or cod liver oil.

Careful study of every case of tuberculosis shows the importance of promoting the digestion and absorption of food as the one great object of all hygienic, dietetic or therapeutic measures, and there is a world of truth in a recent statement by William Henry Porter that "tuberculosis can be fed into or out of the human species."

The variety of drugs recommended for pulmonary tuberculosis tell eloquently how disappointing medicines have been in the treatment of the disease. Of all the drugs that have been found of some value, strychnine easily stands at the head. The dosage should be larger than commonly administered, and to admit of this it can well be given in increasing doses. Following is an excellent prescription:

Rx. Strychnine Sulphate .....gr. Iss.
Aquae .....ounce I.

Sig: Begin with 5 drops in water three times a day, and increase a drop each day until a dose of 32 drops three times a day is taken.

When the maximum dose is reached, which is equivalent to 1-10th gr. three times a day, the patient is advised to go back to the initial dose and increase again.

With very rare exceptions this manner of administering strychnine is followed by improvement in the cough, pulse rate, appetite, digestion, and in fact the whole condition. The patient sleeps better, and the exhaustive night sweats are stopped or greatly reduced.

Next to strychnine, arsenic is the most potent drug which we possess for improving the condition of the tuberculous patient. Its well known tonic effect and stimulating

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influence on the function of nutrition makes it a very valuable remedy in all forms of tuberculosis. Fowler's solution is an excellent form for administration, but a maximum dose is not needed, three to five minims three times a day giving just as good effect as larger quantities. Recently I have been using cacodylate of soda with very gratifying results. This preparation of arsenic, the di-methyl arsenate of soda, is by all means the safest and most efficient of the arsenic salts. The dose is ¼ grain to one grain three times a day. A peculiar garlic like odor is given to the breath, but otherwise the drug is free from disagreeable influence.

Sodium cinnamate and cinnamic acid have proven worthless in my hands.

In a certain number of cases iron in readily assimilable form is followed by marked improvement, while in certain other cases it is more harmful than beneficial, so its administration must always be tentative.

In the majority of cases when a patient's nutrition begins to improve the cough will begin to lessen. But when in the beginning of treatment the cough is so severe as to really require some amelioration, guaiacol carbonate combined with codeine or heroin is very efficient:

Rx. Guaiacol Carbonatis.....dr. I
Heroin .....gr. II
M. et ft. capsulas, no. xxiv.
Sig: A capsule every 3 or 4 hours.

Creosote as commonly administered has no place in the therapy of tuberculosis and is not seriously considered by leading therapeutists. It is extremely liable to derange the digestion, and is, moreover, exceedingly disgusting to the sensitive taste and smell of the average patient. In small doses creosote may prevent fermentation and putrefactive

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changes in the digestive tract, but I have never seen its administration exert any lasting influence on a tubercular process.

Atropine, agaricin and picrotoxin are each efficient in relieving night sweats of phthisis, but the average case is markedly improved by an alcohol bath and rub down at bed time. Flannel soaked in alcohol and laid over the chest is a simple, but effective means of relieving troublesome chest pains, as also is oil and turpentine, equal parts. Alcoholic stimulants are of little value internally except in emergency.

Inhalations are not as highly esteemed nowadays as they have been in the past. When there is much catarrh of the air passages, soothing antiseptic vapors may be applied by means of a good nebulizer with more or less benefit. Numerous remedies are recommended, but an especially eligible combination is one of iodine, tincture of benzoine, oil of cinnamon, oil of eucalyptus and albolene.

In conclusion let me emphasize this all important fact that to-day the cure of incipient pulmonary tuberculosis is not the elusive phantom that it was ten years ago. We know that the intelligent co-operation of patient and physician offers considerably more than even chances in a conflict with early tuberculosis, and this is a message which the medical profession should preach at every opportunity.

But with all the hope that we can honestly give the consumptive early in his disease, it should be remembered that his complete and permanent recovery can only be purchased at the price of from one to five years' patient perseverance and discretion on his part, and a like period of vigilance on the part of his medical adviser. The single efforts of either

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alone may accomplish a measure of success, but they must be united to win back with any degree of certainty that summum bonum of all life—good health.

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Should the State Care for the Consumptive?

By E. J. Melville, M. D., Bakersfield.

Mr. President and Members of the Vermont State Medical Society:—It is not my intention to-day to take up your valuable time in discussing the etiology, diagnosis or pathology of pulmonary tuberculosis. Enough has been written and said upon these subjects by men more competent than one of so little experience as myself.

The problem that faces us to-day and which is of vital interest to every humanitarian in this State is: What are we to do with our consumptives? My personal experience with this class of patients in the past eleven years has not been very gratifying; 95 per cent. of my cases have died or are dying, and I believe this to be your experience as well. These results have occurred in spite of the fact that we have given them every vaunted remedy from aseptolin to creosote and when they were filled to nauseation, have made them inhale it or rubbed it into their hair.

Vermonters as a rule are a very conservative people. They envelop themselves in a passive antagonism when we begin to preach a new cure for consumption. Nevertheless, I believe that every doctor in this State believes that primary tuberculosis can be cured by rest in the open air, forced feeding and good hygiene. That every consumptive in Vermont is not now enjoying this treatment is due, first, to his family physician. Most of us are too easy going and do not insist upon those patients following a set of rules and following them closely. We are afraid perhaps that some untoward

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symptom may arise under the new regime for which we will be held responsible.

The second and more important reason is: There is but a small (say 5) per cent. of the cases in the State who can afford to take the treatment. We do not need to go to Muskoka, Ont., to Rutland, Mass., or to the Adirondacks to prove to ourselves that the above treatment will cure nearly every case of the primary disease and many in the secondary stage. There are physicians in this State who are carrying out this treatment at the patient's home with brilliant success and that number would be greatly augmented if some of the brethren would recover from the delusion that change of climate is of such vital importance to the consumptive. I will admit, of course, that a change of scene, a change of air, or removing the patient from sympathizing friends may in many cases be advisable, yet I do believe that a consumptive will do as well the year around in Vermont as in any climate in the world. Undoubtedly sunshine may be beneficial to the spirit of the consumptive, but I have failed to note any particularly ill effects upon the lungs during continued spells of rainy or changeable weather, providing he was kept warm and screened at such times. To those of you who advise your consumptives to go to a warmer climate during the winter months, I would cite the fact that nature always provides an extra coat of fat for its animals during that time. Cattlemen are so cognizant of this fact that they invariably turn their cattle north or toward the mountains for some time before shipping. The patients who can afford to take the sanitarium treatment, I advise to stay at home and follow these rules, which I usually write out for their benefit or for the enlightenment of their nurse or friends.

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1. Keep warm and dry. Wear woolen underclothing, woolen stockings and thick-soled shoes.

2. Remain at rest, in the open air dressed for driving at least ten hours every day.

3. Train yourself to refrain from coughing while at the dining table, and burn all your sputum.

4. Brush your teeth and clean your mouth after each meal. Avoid kissing anyone, and use your own eating and drinking utensils.

5. Keep yourself perfectly clean. Take a warm bath twice a week and a cold spinal douche followed by a brisk rub-down every morning. If reaction does not follow promptly this can be omitted. Change your underclothing, socks and bed sheets every second day.

6. Have your bed room heated by an open fire-place or a wood stove to a degree not exceeding 60. Keep all the windows open during the day and one at night and use this room for sleeping purposes only. Remain in bed ten hours every night. Do not forget that night air is as good as day air.

7. Be cheerful, avoid worry, anxiety and peevishness. Remember that a patient who tries to get well increases his chances tenfold.

8. Take mental and physical rest. Rest absolutely, continuously and cheerfully.

9. Do not use tobacco in any form and alcohol only upon the advice of your physician.

10. Eat all you can four times a day and drink at least four raw eggs a day between meals. Confine your diet as nearly as possible to cereals, milk, cream, custards, milk and rice puddings, soup, cocoa, fresh fish, potatoes, chicken, duck, beefsteak, lamb chops, fresh butter, poached and soft boiled

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eggs, and toast. You will be surprised at the quantity you can hold when you acquire the eating habit.

11. Remember that these rules are not original with your doctor; most of them have been copied verbatim from the works of men who have made a life study of your disease, and if you follow them faithfully for a year you will get well and your symptoms will improve at once.

The basis of this treatment is free, free as air, it is air; yet how many consumptives in the State can afford it? How many can afford to take a complete rest for a year? How many can afford good, intelligent nursing for a year? How many can afford plenty of good nutritious well-cooked food for a year? Not over 5 per cent, unless some modern philanthropist can be induced to build and endow a hospital for the care of the curable instead of the incurable; the only hope for 95 per cent. of our tubercular patients lies in the State institution. No doubt many of you could relate a similar experience to this:

A young married woman, one of the 95 per cent aforementioned, sickened and died of consumption. A sister who nursed her and who had always been in perfect health married a young clergyman shortly afterwards, and within two years herself, her baby and her husband were dead of the same disease. The clergyman went to his father's home to die and within a year of his death his father died, I believe of the same disease. The husband of the first case married his deceased wife's sister and now they are both dead of pulmonary tuberculosis, and the end is not yet. This occurred within a period of five years and I can vouch for the truth of it, as I treated four of the cases myself.

Now, if tuberculosis is a curable disease, wherein lies the fault? The fault is with you and with me and with every

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tax payer in this State, in not providing a sanitarium for the care of this first case and at least preventing her from destroying so many innocent lives. An institution of this kind will be built when the voters of this State feel the need of it and it is the duty of every doctor in this State to endeavor to make them feel the need of it. Prove to your clientele beyond a reasonable doubt that this disease can not be inherited, but must be acquired.

Show them that when the disease gets into a family the girls who care for the patient and are confined to the house are infected and die, while the boys who are out in the open air about their farm duties escape. Throw your chest protectors, mufflers and cod liver oil into the fire and preach to them the gospel of air, nutrition, rest and cleanliness. Have them look upon the State sanitarium, not as a prison, but as a pleasant home. Cite cases where the favored few who could afford this new treatment got well while the many died, as they had not the price.

Much money is spent yearly to build and maintain town, county and State institutions for the care of the chronic criminal and the incurable idiot, while not a dollar goes toward the curable consumptive. Therefore, let us be united in our efforts to have the Legislature of this State pass a bill for the erection and maintenance of a sanitarium for consumptives, where those who can afford to pay may do so and where those who can not may be treated free.

Now, gentlemen, the solution of this great problem is in your hands. When you awaken the people of this State to the fact that consumption is a more contagious disease than leprosy, or the bubonic plague, and equally dangerous to diphtheria and small-pox; when the tax payers realize that the life of the consumptive is of more economic value

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than is the life of the idiot or the life of the criminal, then, and not until then, can we hope to make any advancement against the ravages of this white plague.

DISCUSSION.

Dr. W. N. Platt.—When one asks why has this disease increased so rapidly during the last ten years, we can any of us answer very readily. I do not believe that there is a single community that quarantines its consumptive patients or even make a pretension of doing so. The consumptive expects he will get well and his friends agree with him also. Scientists themselves doubt it contagiousness, although they allow it is communicable. The treatment of fresh air and good food is not a new treatment.

It became evident when Virchow and his followers demonstrated that contagious diseases were an entity that sooner or later, as they were communicable, they were to become curable and preventable. And when the great Koch placed tuberculosis among the contagious diseases and described its particular germ, every one knew that the ravages of this disease were approaching the end.

Knowing what was to come, the medical world is constantly imagining that the methods of quarantine, prevention and cure are easy, but as yet the great scientists have hardly demonstrated any real advance on these points. To be sure, by the use of tuberculin, microscopy and the X-rays, we can be more certain of our diagnosis than formerly, but certainly each advance step will require a tremendous amount of laboratory study, unless perchance like Jenner we stumble on a solution of the problem.

We have seen by the report of the different sanitariums that about 68-75 per cent. are cured by hygienic means, air,

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rest and food, or seemingly cured. We have the right to believe that a majority of these cases would have cured themselves, so to speak. Forty years ago Hughes Bennett found in eight autopsies, 27 cases where the lungs showed lesions which had cured themselves. Hamilton or Birmingham asserts that it is possible that almost everybody at some period of his life has had consumption and got well of it. During the last two years I have sent two specimens of sputum to the State laboratory from two patients who were slightly feverish anl anaemic; the examination showed tubercle bacilli. The physical examination did not show lesions, and from my own observations these cases were similar to those admitted to the Massachusetts State Sanatorium. Without sanatorium treatment, these cases convalesced. What per cent. of the inmates of a sanatorium would have recovered had they lived the old home life? But we do know from our own personal experience that institutional life for the consumptive saves a great many valuable lives at a time of life when the State can least afford to spare them. It seems quite odd that the communicability of the disease has been so well known for seven or eight years, and yet I do not know of a single State or municipality that has made this disease systematically reportable or introduced quarantine laws that amount to anything. Nor do I see any possibility of these efficient measures being taken until the public more fully realize what consumption is than they do now.

Dr. E. J. Melville.—I might say that I did not take as much time to prepare the paper as I should have liked to do. I might add a few points. The most important one is that I have had very little experience with this new treatment. I have had four cases only in the past five or six years in whom I have been enabled to see the results of the treatment. All of

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these cases were undoubtedly tuberculosis; three were pulmonary tuberculosis, at least Dr. Wiltse and his predecessor informed me several times that the sputum which I sent to the laboratory contained the tuberculosis germs. One was a case of tuberculosis of the peritoneum. This patient was a dentist in Boston. He had been in practice there. He was admitted to the Boston City Hospital last April and the doctors there were some three weeks diagnosing his case. He had always been in perfect health and I might say had perfect habits. He was operated upon and his temperature ran up to 103 and remained so for several weeks. His friends lived up in my town and I had occasion to go down to Boston quite a number of times to see him. The doctors down there advised me to bring him up to Bakersfield and have him remain there. He came up there some time about the first of June. They were not giving him any medicine at all. This seemed rather strange to his friends. The doctors advised rest in the open air and followed out continuously. There was a veranda on the north side of the house and also one on the south side. We got two canvas curtains and this fellow has been out there ever since, all the time except at night, no matter whether it was raining or windy. He might have possibly recovered after the operation, but I can say that he had some deposit in the right lung over the diaphragm. He has gained right straight along. He weighed 109 pounds when he came up there and he told me yesterday that he weighed 140 pounds. He is five foot five inches. He is gaining right along and does not seem to have any deposit in the abdomen at all. I have not allowed him to exercise at all. I don't know whether he would lose this fat if he began to exercise. That is one of the five per cent. of cases who could afford to take this treatment. The

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treatment in itself is inexpensive, but there are comparatively few who can afford to stop their work, give up everything, and rest for a year. I have taken up considerable time this morning, but in closing let me ask you to do what you can to get your representatives from your different towns interested, as Dr. Peck stated last night, with the appropriation of some money towards the erection and maintenance of a sanatorium for the cure of the curable. We may not be able to do it this year, but we may in two or three years. Gentlemen, I thank you very kindly.

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Abscess of the Brain, in the Temporo-Sphenoidal Lobe; with a Report of Two Cases Operated Upon.

By G. Carlton Berkley, M. D., St. Albans.

Probably no more rare and obscure disease is met with by the general practitioner or the eye and ear specialist than abscess of the cerebrum. It became my lot in less than a year to have in my practice two cases whose clinical value I believe will be of great benefit to this Society. In the first case the abscess was upon the left side of the cerebrum in the temporo-sphenoidal lobe. The second case was in the same lobe of the brain but upon the right side, and both cases were operated upon.

A young man, 22 years of age, came to my office in the early part of March of 1900 with an attack of influenza followed by acute otitis media. After suffering severely for four days from pain in the left ear, a discharge occurred, this being followed by great relief. Under treatment, the discharge gradually ceased and he was apparently well on the first day of May, although deaf and suffering from tinnitus aurium. The treatment of the ear was discontinued and Politzer inflation twice weekly and painting the throat with an iodine-glycerine solution substituted. This treatment was continued occasionally till the first of July; then, upon the recommendation of Dr. Twitchell of Burlington, three times a week.

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On the 15th of July there was a sudden and violent recurrence of the pain in the ear, lasting for about ten days. On the 26th of July he was seized with rigors and vomiting, the pain and tinnitus at the same time ceasing. At that time temperature began ranging from 100 to 101.05 degrees F. The headache recurred on many occasions, however. The vomiting occurred two or three times daily and was distinctly cerebral in type. August 5th I took him to Montreal and entered him in the Royal Victoria Hospital under care of Drs. Buller, Bell and Stewart.

On admission he was suffering from more or less constant severe headache with vomiting. He was slow in answering questions and since the onset of the rigors and vomiting, etc., ten days previously, he had great difficulty in naming objects. He was unable to mention the name of any object whatever at this time. He did not know his own or his mother's name. He, however, had a very extensive vocabulary of words and knew their proper use. Although he was unable to name an object he had no trouble in proving that he understood the use of objects that he was totally unable to name. He understood perfectly what was said to him and he also correctly obeyed commands given in writing. He was able to write from dictation and to copy correctly. He read correctly and easily.

The left ear was not discharging; the canal was narrow. The membrana tympani was congested but not perforated. There was no swelling or tenderness about the mastoid; the right ear was normal and a watch was heard at half an inch. Eyes—The pupils were normal in size and reaction. There was distinctly a beginning double optic neuritis.

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A diagnosis of abscess of the temporo-sphenoidal lobe was made and immediate operation determined on August 7th. Dr. Buller opened into the mastoid cells. He found a little pus. Dr. Bell proceeded to expose the brain over the temporo-sphenoidal region and after opening the dura, he found the parts bulging, but not pulsating.

With a trocar he was able without any trouble to find a pus-containing cavity in the left temporal lobe. Nearly three ounces were evacuated. The night after the operation the patient slept better than he had done for many weeks, being free from pain and discomfort. Even within twelve hours after the operation it was noticed by several observers that there was a distinct improvement in his speech. In twenty-four hours the improvement was so marked that it could be said that he had completely recovered his lost power. All kinds of test objects were promptly and correctly named. Unfortunately, about thirty hours after the operation symptoms of meningitis developed which proved fatal forty-eight hours after their onset.

A post-mortem examination was not obtained. This does not, however, detract much from the clinical value of the case, as during life the presence of the abscess had been demonstrated.

Mrs. C., aged 34 and married, came to my office in July of 1900, suffering from deafness of the right ear dating from an attack of purulent otitis media of two months previous, on same ear, which lasted a few days and stopped of its own accord without treatment.

I found upon examination the membrana tympania was dry and stiff. The nasal opening of the Eustachian canal upon the affected side was very small. I treated her three times a week for two or three weeks with Politzer inflation

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and painting the throat and posterior nares with an iodine-glycerine solution, strength one to eight.

On December 27th, 1900, she was taken with a feeling of malais; loss of appetite, acute coriza and some temperature which lasted about one week, she then suffered pain again in the right ear, which was followed after four or five days with a purulent discharge. This discharge continued for about a week and suddenly stopped. The pain in the ear became more severe, extending to the right side of the head back to the occiput and down the neck. This pain was so severe that it required several hypodermics of morphine daily to control it. The patient showed slow comprehension; disconnected ideas; weakness of memory; great mental excitement; growing restlessness and hysteria; little or no elevation of temperature; slow pulse; vomiting two or three times daily of a cerebral type. The patient showed no aphasia.

January 27th, 1901, patient fell into a heavy coma simulating chloroform anaesthesia. The right pupil dilated and eye reflexes absent and lids partially open, which required my closing them with isinglass plaster to prevent ulceration of the cornea. This coma lasted uninterruptedly until the 2nd of February. There was no tenderness or swelling over the mastoid and an examination of the eyes with the ophthalmoscope revealed a beginning optic neuritis of the right eye.

February 2nd I took her to the St. Albans Hospital and a diagnosis of an abscess of the temporo-sphenoidal made and an immediate operation determined upon; consequently February 3rd, in the presence of Drs. Jenne, Page, Belden and Lunderville, I opened the scalp above and behind the ear and trepaned out a small button of bone, (which I will

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here submit for your inspection),over the superior temporal sphenoidal convolution, exposing the dura. I found the dura bulging into the opening where the bone was removed. I passed a large sized aspirating needle directly into the right temporal lobe. After passing through about 2 cm. of brain substance, I struck the abscess with the first puncture and nearly 2½ oz. of pus was evacuated. I then withdrew the aspirating needle and with the handle of a scalpel proceeded to tear the opening in the dura larger. I passed in a small curette and removed some of the slough. This I followed with an irrigating nozzle and thoroughly washed out the cavity with a normal salt solution. I inserted through the opening in the dura and brain two small wicks of iodoform gauze to serve as drainage and partially closed up the wound in the scalp and dressed it with dry sterilized dressing.

I proceeded to re-dress this every day and at each dressing irrigated the abscess cavity in the brain. After about one week I substituted for the gauze wicks a small rubber drainage tube and as fast as the cavity granulated in, I shortened the drainage tube, until at the end of two weeks I removed the drainage altogether, and in four weeks from the operation the scalp was nearly closed over the opening, and in another week the wound was entirely healed.

As soon as the patient recovered from the anesthetic all her senses returned and all her previous symptoms disappeared.

I failed to say that the patient also had diplopia, which was the only symptom present after the operation. This lasted for about five days and then disappeared. The patient has been perfectly well and is at the present time doing her own housework for a family of four.

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Also during the five or six days which the patient was under the coma she was distinctly clonic and tonic spasms of the left side of the body which would come and go several times during the day. She took no nourishment by mouth of any kind or any fluid during the continuance of the coma. She was nourished by nutrient enemas.

Two important points in this case is the absence of temperature, which is always present in meningitis complications, and the absence of motor or sensory aphasia, which is frequently present in affections on the left side of the brain.

I find during the past two years reports of very few abscesses of the cerebrum, and that writers and text books upon this subject differ greatly in their opinions and do not deal with the subject with any degree of exactness. After observing these two cases and making rather extensive research of literature upon this subject, I am able to present the following conclusions:

This severe affection is induced in the great majority of cases, not by diseases of the mucous membrane, but by diseases of the bone which almost always extend to the dura mater. The best authorities show us that it is always caused by otitis media and that 91 per cent. of the cases is due to chronic otitis and 9 per cent to acute. The dura is almost always united to the surface of the brain at a point where the cerebral abscess is nearest to the diseased bone. The brain substance which separates the abscess cavity from the place of union, between dura and bone, is, as a rule, only a few millimeters broad, and has almost always been found diseased.

The abscesses are found in about 75 per cent. of the cases in the temporo-sphenoidal lobe in the neighborhood of

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the diseased bone over the tegman tympani et mastoidei, upon which the fusiform gyrus is situated. It is very rarely that they are found in the occipital or frontal lobes. In 10 per cent, more than one abscess has been found in the brain. When more than one abscess is found it is usually in cases of long standing.

The size of the abscess varies from the smallest dimensions to the occupancy of almost the entire temporo-sphenoidal lobe. Some of them are as large as from 7 to 9 centimeters long and 5 or 6 centimeters high. They contain usually the same kind of pus as the otorrhea shows, thick and creamy or thin, frequently greenish and offensive. The majority of these abscesses being chronic, are surrounded by a capsule varying from 1 to 5 millimeters in thickness. Those not capsulated are commonly surrounded by a zone of softened brain substance. The abscesses continue to steadily grow, whether they are invested with a capsule or not.

The abscesses frequently communicate with the mastoid or middle ear and give off continuously some of their contents; they may also perforate the cranial capsule and discharge pus through a fistula. This spontaneous evacuation does not, however, cure the abscess. A notable fact is that a constant otorrhea from central abscess often suddenly stops without any significance as to the result. So far only one case of spontaneous recovery of a cerebral abscess has been recorded. That was discovered at an autopsy by Sutphen of Newark, N. J., showing where an old abscess had emptied itself previously by a carious perforation of the temporal bone. The almost unexceptional termination of an encephalic, if not operated on, is death, caused either by cerebral pressure, by perforation into the ventricles or the subarchnoid

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space, or through complicating simus thrombosis and meningitis.

The symptoms, course and termination in many cases may be divided into four stages; the initial with fever, headache, vomiting, etc.; the latent with milder discomfort, hysteria; the great nervousness; the manifest with full development of a severe brain disease, and the terminal, with exhaustion and coma, or sudden appearance of the fatal phenomena.

For the sake of consideration and study the arrangement of the symptoms by V. Bergman into three groups are of great benefit. In the first or general symptoms we have weakness, loss of appetite, foul tongue, pale or yellow color, as in all grave diseases; fever, moderate or absent.

The second group, or cerebral pressure symptoms, genrally more pronounced in cerebellar than in cerebral abscess. Headache is the earliest and most constant symptom. It is usually in the neighborhood of the abscess but not infrequently radiating to other regions, particularly the occiput and forehead and all over the head. Tenderness on precussion is frequently but by no means generally present. Nausea and vomiting are almost always present but not characteristic. Dizziness and disturbance of equilibrium are frequent. Disturbance of the functions of the brain is a frequent and marked symptom. Slow comprehension, apathy, incoherence of ideas, weakness of memory, at night great mental excitement, crying, restlessness, delirium, alternating with drowsiness, are always present and frequently the cause of confusing the attending physician into making a diagnosis of hysteria, as at this time there is frequently no discharge

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from the ear and no external objective symptoms of brain abscess.

Convulsions and elevation of temperature, moderate and usually with slight evening exacerbations, pulse slow and respiration regular. The opthalmoscope will almost always reveal an optic neuritis, which will show itself earlier and more pronounced on the abscess side of the brain.

The third group or localizing symptoms, deafness in the non-suppurating ear, has been observed several times and is explained by the fact that the auditory center of the right ear is situated in the temporal lobe of the left side anl vice versa. Word deafness—mental or sensory deafness—i. e., the patient hears the word but does not understand it. Word blindness, dyslexia, letter blindness and word without letter blindness, conditions in which with normal vision the patient cannot understand written or printed language, are referred to the visual memory center situated in the angular and supramarginal gyri on the left side of the brain.

An abscess in the left temporal lobe may give rise to a speech defect or it may not. Very considerable accumulations of pus may be situated in this region without any apparent speech disturbance, while, on the other hand, a small purulent focus may be enough to give rise to marked disturbance of speech. In speaking of defect of speech in this paper I intend to refer solely to aphasia, and not to either slowness of speech or to dysarthria.

Aphasia is probably present in nearly 50 per cent. of abscesses of the left temporal lobe. The exact form of aphasia met with is, however, rarely treated by writers on this subject with any degree of fullness or exactitude. The simple but vague statement that aphasia is present, being all that is found in the great majority of text-books, even in those

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dealing more especially with diseases of the nervous system. A few authors refer to word-deafness as being the only characteristic symptom of lesion in the temporal lobe. This form of aphasia is, however, comparatively rare. It would be a mistake to wait for its appearance in any case before concluding we had to do with an abscess in this situation. A pure and complete motor aphasia has been met with, as also par-aphasia, the presence of the former being explained by distant pressure, and that of the latter by cutting off of the connections between the auditory and motor centres.

Crossed paresis,crossed clonic and tonic spasms and convulsions, crossed facial paresis and crossed hemianesthesia, all due to a lesion of the internal capsule, are occasionally met with.

Homonymous hemianopsia, a condition where the corresponding area of the visual field of both eyes is destroyed, has been reported several times. This sometimes is produced by the destruction of the optic tract somewhere along the optic radiation between the region around the calcarine fissure and the optic chiasm. In cerebral abscess it refers chiefly to the optic radiation in its subcortical passage through the temporo-sphenoidal lobe. This sometimes is not looked for and would be found more often if it were.

The differential diagnosis of purulent mastoiditis and its different intracranial complications is not hard to make. In children it is sometimes difficult to ascertain whether the mastoid is diseased alone or together with the intracranial structures. Meningeal irritation caused by congestion is not easy to distinguish from infective intracranial inflammation. The symptoms will usually show and if persistent and alarming an exploratory operation should be decided upon and the exposition will usually lead to a diagnosis.

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The most important helps in the diagnosis are the kind and seat of the original ear affection. Here, too, often an exploratory operation will be the decisive step. The abscesses in the middle cranial fossa are induced by diseases of the tegman tympani and tegman tubae.

Abscess of the cerebellum is induced chiefly by mastoid suppuration, rarely by disease of the petrous bone. The latter variety can be recognized by the total deafness it produces in the affected ear. If cerebral disease exists together with suppuration of both ears, it may be difficult to ascertain which hemisphere of the brain contains the abscess. Local pain, tenderness on percussion and the opthalmoscope are a great help in making the diagnosis.

A cerebral tumor may co-exist with purulent otitis media. The diagnosis is usually easy. The tumor has a slow development, no fever or rigors and almost always a constant headache. The diagnosis between abscesses and meningitis is very important and is usually made by the fact that in meningitis we have high temperature and great acceleration of the pulse without remissions, and the irritability, restlessness and general excitement and hyperesthesia of the organs of sense, contrasted with the slow cerebration, apathy and drowsiness in abscess. Menengitic temperature may indicate the existence of both abscess and meningitis.

Infective sinus thrombosis is characterized by mental depression, rigors, constipation, anorexia, apathy, and the steep-peaked pulse chart. All of the intracranial complications may be present in the same patient. Cases of this kind have been reported, but are usually found in the latter stages of intracranial disease.

I am very much indebted to Herman Knapp, M. D., of New York; Francis Buller, M. D., and James Stewart,

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M. D., of Montreal, and M. C. Twitchell, M. D., of Burlington, Vt., for much of the material contained in this paper.

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DISCUSSION.

Dr. M. C. Twitchell.—I should like to say a word or two about the pathology of this subject. Suppose the mastoid disease were slow in its course and did not involve too large an area of the inner table of skull, then a localized pachymeningitis would result with or without pus between the dura mater and the bone. If the mastoid disease still continued without any particular exacerbation, the dura mater, arachnoid and pia mater, would become united, welded into one membrane, and these united membranes form nature's wall of protection against further invasion. So long as that wall remains intact, the patient is comparatively safe. Should, however, the disease gain access to the inner layer of the dura mater, before the membranes have become agglutinated, the subdural space would lie open to

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attack, and an acute purulent meningitis would probably terminate the case. On the other hand, let us assume that, after the welding together of the membranes, the mastoid disease still persists or becomes more acute, then the arachnoid and pia mater break down to form a sub-dural abscess, and this is what took place in Dr. Berkley's first case. In regard to symptoms, of course it is well for the general practitioners to know that brain abscess can give rise to changes in the pupil, optic neuritis, aphasia, etc. But it seems to me more important for him to know certain earlier and more common symptoms. The majority of these patients give a history of an ear discharge, lasting several months or more frequently several years. The discharge may have been very slight, they cease to regard it of any importance, when suddenly, having caught cold or often without any assignable cause, a severe earache begins—the pain radiates into the head—it is severe, he has a rigor, vomits easily, very little if any temperature, and this, the first stage, lasts from twelve hours to a week. In the second stage his pain is much less (probably because his sensitiveness to pain is diminished). His mind is fogged, he answers questions slowly, his temperature is normal or but slightly raised, pulse and respiration slow and bowels constipated.

With regard to Dr. Berkley's first case, I would say that I saw the patient and made the diagnosis which subsequent operation proved to be correct. Last year in operating on mastoids, I encountered intracranial complications twice, and so far this year have met with two cases, one of which I wish to report a little more in detail. It was a child four years old. Seven weeks before I saw her she had had scarlatina. After she had been sick two weeks her right ear began to discharge, and some days later the left did the same

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thing. Glands in her neck and one elbow joint had suppurated. On examination, I found thick pus flowing from both ears and swelling over right mastoid process. I cleaned out the mastoid process and the middle ear on the right side and found that the roof of the antrum and middle ear was really a sequestrum, the removal of which evacuated a subdued abscess at the base of the temporo sphenoidal lobe and exposed the dura mater over an area an inch long and one-fourth inch wide. A few months later I operated on her left mastoid and found a small extra dural abscess in the cerebellar fossa. Recovery from these operations was uneventful. In closing I wish to emphasize the fact that acute mastoid disease is seldom accompanied by intracranial trouble. It is the chronic otorrhagia that involves the brain.

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Medico-Legal Autopsy.

By M. J. Wiltse, M. D., Burlington.

I do not presume to give you anything particularly original, but from recent experiences, I think it may be well to review, in a way, at least, to freshen our memory on the little things which are so easily forgotten and which are of great importance in connection with a medico-legal autopsy. This entire paper is made up from Witthaus and Becker, Delafield and Prudden, and notes from the lectures of the late Dr. Jo H. Linsley.

A medical examiner before proceeding with an autopsy, especially if called before the body has been removed from the place where it was found, should carefully note certain facts. These should be entered by him or an assistant, with great care, in a note book, as this book can be introduced as evidence in any trial. A satisfactory way is to dictate to the assistant as the examination proceeds; at the conclusion the assistant reads the notes taken, the examiner verifies them, and in turn these are signed by the examiner, his assistant and others that may be present.

The only difference between a medico-legal and a pathological autopsy is that in the former case everything which might subserve the ends of justice should be carefully noted, and the changes found most accurately described, especially any abnormalities found in the external examination. The method of the examination will be governed by the case in

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question. The object may be to determine whether a person has died from violence or poisoning, to establish the cause of death, especially if it has been sudden, or to ascertain the lesion of a disease, or to confirm a diagnosis; in any case, the examination should embrace all the important parts of the body, not merely the suspected organs.

In endeavoring to ascertain the cause of death, with the aid of clinical history or otherwise, the greatest care is necessary. Many of the lesions which we find after death indicate rather the ravages of disease than the cause of death. Who shall say how great a degree of meningitis or of pneumonia or of endocarditis, or of cirrhosis, or of nephritis, necessarily cause death? It must often be acknowledged that no sufficient cause of death can be found, but the more accurate and careful the examination, (especially when a microscopical examination of the organs is made), the fewer will be the number of such cases. If no apparent lesion is found, it must not be forgotten that many poisons destroy life and leave no trace that the pathologist can discover; again, there are cases recorded wherein the chemist has failed to isolate the poison which may have caused death.

When one undertakes an autopsy, they never know where it will end, therefore the greatest care is necessary. Sudden death of persons who have apparently been in good health up to the time of death are often particularly obscure. This again suggests the most thorough inspection and the recording of the most minute detail.

Before commencing, one should not forget to examine surroundings, position of the body, etc., providing it has not been moved since finding; one should almost assume the role of a detective. The minuteness of inspection will depend upon the character of the case.

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It is well to note the character of the soil, condition of the ground, foot prints, if so, their direction, evidence of any struggle, presence of a weapon, and the exact position in which the body lies, especially the position of the hands and feet. This is important, for the body may be found in a position which the deceased could not have assumed on the supposition of the wound or injury having been accidental or homicidal. If a body be found in the water, examine the character of the water and temperature, if near the shore, the character of the soil.

In the case of an unknown person or one suspected to have died from unnatural causes, it is necessary to describe the person, physical appearance, and to preserve the clothing in so far as possible; examine closely for stains (blood and others).

The situation of the blood stains and their number and extent on clothing or surrounding objects should be noted. This will often show whether a struggle has taken place after receiving the fatal wound, and is also of medico-legal importance if made at the time the body is found, for it may be so situated as to show that the body has been interfered with after death.

Again, spots of blood found upon articles of clothing or upon surrounding objects should be noted as to their form and direction, for they may serve to furnish an indication of the position of the person with respect to them when the wound was inflicted. For example, if the spot was oval, the presumption is that the person was placed obliquely with respect to the stain while the hemorrhage was occurring. The force with which the blood was thrown out will in some measure be indicated by the obliquity or length of the spot. The amount of blood will also often indicate whether the

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person has died suddenly, the exact spot where death occurred, whether a struggle took place, and will also preclude the possibility of a person moving after receiving the fatal injury. When we examine a body, especially when found in a room, care must be taken not to be misled by the accidental diffusion of the blood by persons going in and out, or touching the body.

The examination of the clothing should be thorough. A description of each article should be noted, and the order in which it is removed, for often it is important to prove that the garments were worn by or belonged to the deceased. If any blood is on the clothing,note whether in large patches, or whether it is sprinkled over the garment, the amount and what garments are stained by it. Note and examine whether the blood has flowed down the front of the clothing, whether it has soaked the inner garments, or again, whether it has collected along the back, for these appearances will sometimes demonstrate whether a wound was inflicted while the person was sitting, standing, or lying down. For example, if the throat is cut while the person is lying down, the blood will be found on each side of the neck along the back, and not down the front of the body. Few suicides cut their throats in a recumbent position, and this distribution of blood may serve to distinguish a suicidal from a homicidal wound.

The condition of the clothing may also serve to show whether there has been any struggle and the presence of dry spots or mud on it may sometimes serve to connect an accused person with an act of murder.

If there are several stabs or cuts on the body, involving the clothing,it should be noted whether they are blood stained, and, if so, whether the stain is on the inside or outside of the

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garments, for sometimes in simulated personal injury, a stain of blood may be inadvertently applied to the outside of the clothing, as in wiping a weapon.

If a weapon is found, its character and exact position should be noted. This is frequently of importance in telling whether a person has died from an accident or self-inflicted wound. Note whether the weapon is sharp or blunt, straight or curved. If a knife, the handle and inner portion should be examined for the blade may have been washed. If the wound has involved any large vessels, it is improbable that the weapon could have been thrown any distance from the body, and when it is, there are always fair grounds to expect interference with the original position of the body. One circumstance which always strongly points to suicide is the finding of the weapon firmly grasped in the hand of the cadaver. The hand of a dead person cannot be made to grasp or retain a weapon as does the hand which has grasped it at the last moments of life. The amount of blood on the weapon should be noted, but it must be remembered that a knife may have produced a fatal stab wound and still no blood be found upon it.

When a person has died of a gunshot wound, especially at close range, it is important to examine carefully direction of wound, look for wadding and powder marks. Having completed the examination of the surroundings, and taken every precaution towards identification, one may proceed.

After the removal of clothing, search closely for and record all contusions, wounds, etc., their size, situation and condition, whether anti-mortem or post-mortem, also deformities and physical peculiarities of hair, eyes, moles, etc., by which the person may be identified. Note carefully the relative size of the pupils of the eyes. If possible it is well

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to photograph, weigh and measure the body. There is great variation in the weight of individuals within the limits of the normal, but these averages may be useful in estimating the relative weight of the single organs. Note the general nutritive condition of the body, look for evidences of external injury, for skin diseases, fractures, burns, scars, tattoo marks, odema, gouty deposits, ulcers, abscesses, enlarged lymphatic glands, etc. The external genitals should be very carefully examined for the presence of injury or syphilitic cicatrizes. In medico-legal cases the hands of the dead person should always be examined for the presence of cuts, excoriations or foreign substances upon them.

To give any value to the presence of rigor mortis, it is necessary to note the nature of the substance upon which the body is lying, whether the body is clothed or naked, young or old, fat or emaciated. These conditions materially influence the rapidity of cooling and the onset of rigor mortis; on the average this takes place after about six hours, and in whatever position they may have been at the time of its occurrence. It usually begins in the muscles of the eyelids, extends to the back of the neck and lower jaw, then to the face and neck, passing downwards to the thorax and lower extremities. It usually disappears in the same order, although commencing on the average six hours after death, it may set in almost instantly or it may be delayed for 24 hours or more. It may pass rapidly, rare cases one to three hours, or it may persist for two or three weeks. In general it disappears within 24 to 48 hours, depending upon the conditions.

It may be well to mention at this time that if a chemical analysis of the various organs and tissues is to be made, and it is impossible to have the chemist present (which is prefer-

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able), the medical examiner should obtain some new glass jars of suitable size with close fitting glass covers, and in them the various organs are to be placed if possible with no preservative. Great care is to be taken that the organs touch nothing in removing from the cadaver to the jars. If impossible to deliver at once to the chemist, alcohol may be poured over the organs in the jars, but it is especially important that a sample of this alcohol should be retained that the chemist may at a future date test the same for any impurities. After the organs and tissues have been placed in the jars, the mouths should be closed and sealed, the seal to remain in the custody of the examiner until the jars are delivered to the chemist. In cases of suspected poisoning, it is not sufficient that the stomach and intestines alone should be preserved for the chemist, for it should be borne in mind that the portion of poison remaining in the alimentary tract is but the residue of the dose which had been sufficient to destroy life and if the processes of elimination have been rapid, no trace of the poison will be found in the alimentary canal, but can readily be detected in other organs. Again, the poison may not have been introduced by the mouth, in which case none may be found in the digestive tract. The chemist should receive besides the stomach and entire intestinal canal, the liver, one or both kidneys, the spleen, a piece of muscle from the leg, the brain, and any urine found in the bladder. When it is impossible for any reason to obtain the whole of any organ, the part removed should be carefully weighed and its proportion to the rest of the organ noted. It is also of extreme importance to preserve sealed and labelled, jars containing those parts of the body which may show the evidence of disease or on the appearance of which one's evidence is founded. As all are conversant with the

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anatomy of the organs and considering the amount of time devoted to minor detail, I will only briefly mention the internal examination. The method should be such as will enable us to examine the relations of parts to one another, without seriously disturbing them, and to remove and inspect the organs in such order and manner as will not interfere with the examination of the parts which are to follow.

In medico-legal autopsies, the great cavities, the head, the thorax, and the abdomen, should be examined in their successive order from above downward. The reason for beginning with the head is that the amount of blood in the brain and its membranes may be determined more accurately.

Remove the calvaria and examine the dura and pia maters, note the degree of congestion, existence of pus or blood, and the amount of serum.

Remove the brain and examine the arteries at the base for atheroma, thrombi, emboli, and aneurisms; examine the pia mater of the base, especially, for evidences of hemorrhage, tumors, tubercles, and inflammatory lesions; open the brain and examine its cavities and internal structure; note conditions of the ventricles, the floor of the lateral ventricles is the most frequent spot of hemorrhage; if one is found, note the extent.

In opening the thoracic and abdominal cavities, the incision should extend from the top of the sternum to the pubic bone. A superficial examination of the abdominal cavity should be made before opening the thorax. Note the relative position and general condition of the organs. The color and amount of blood in the presenting parts; whether there are any signs of inflammation, foreign bodies or tumors. Examine the vermiform appendix. The amount of

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fluid present and its character. Look for perforation, invagination and hernia of the intestines. And determine the height of the diaphragm on both sides. Determine the presence or absence of gas in the plural cavity, this done, open the thorax in the usual way, that is, sever the sterno-costal cartilages close to the end of the ribs, disarticulate the clavicle at the sternum and remove the piece thus disengaged. Observe the position, color, and degree of distention of the lungs, examine for adhesions, amount of fluid and its condition. Open the pericardium, note the amount and appearance of the serum, examine for adhesions. Pass the hand over the arch of the aorta and examine for aneurism or dilatation. Remove the heart, note whether blood is in right or left heart. Examine the valves, either by the "water test," "finger test" or by actual measurement; open the cavities and better examine the valves, look for clot, and note whether ante-mortem or post-mortem; careful examination of the coronary is important; after removal of the blood the heart should be weighed. As before stated it is well to weigh all the organs. Remove the lungs and examine externally shape, color and consistency; open the bronchi, continue the incision into the pulmonary substance along the minute bronchi; note the mucous membrane and contents of bronchi, color of the lung substance; note whether the alveoli contain blood, serum or inflammatory products; examine carefully for the presence of miliary tubercles. At this point a ligature should be placed about the oesophageal opening of the stomach. The tongue, trachea and oesophagus should then be removed and examined for evidences of inflammation, caustic poisons, tumors, foreign bodies or strictures. Examine larynx and trachea for evidence of odema of glottis and note condition of mucous membrane.

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Having completed the examination of the organs of the thorax, proceed with the abdominal cavity. Dissect off the omentum, noting if abnormally adherent. The first organs to be removed are the kidneys. These are to be examined carefully, note size, color and weight; there is some difference of opinion concerning their weight. I have a record of 707 autopsies at a certain hospital, which show the average weight of the right kidney to be 5 ounces 3 drams, and the left to be 5 ounces, 4 drams, 8¾ grains. Of the 1393 examined the average weight is a little less than 5½ ounces, the individual weight ranging from 1-23 ounces. Some of the kidneys were nephritic, while others were apparently normal, therefore we may safely state the weight of a kidney to be from 4½ to 6 ounces. Note the degree of adherence of the capsule and the surface of the organ, the cortex, the pelvis, the degree of congestion, note carefully the markings.

The spleen should now be examined. Its size, color, and consistency should be noted as well as the presence of any tubercles or tumor. Next in order, is the examination of the stomach and intestines. You are all familiar with what should or should not be found here, and inasmuch as this is a medico-legal case, I will simply say that unless the chemist is present the medical examiner should not open the stomach or intestines; great care is to be exercised in their removal. Double ligatures should be placed about the end of the duodenum,at the end of the ilium and at the lower portion of the rectum, one having already been placed about the oesophageal end of the stomach when removing the oesophagus. The jejunum and ilium should first be removed by cutting between the ligatures, then caecum, colon and rec-

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tum, lastly duodenum and stomach. These should be placed in jars and sealed at once.

Only in this way can an absolute knowledge of the character of the stomach contents be obtained, which is of much importance in certain medico-legal cases.

The stomach and intestines having been removed, the examination of the liver and pancreas are next in order. The entire liver should be delivered to the chemist.

The genito-urinary organs should have a most thorough examination. In no case should you omit to catheterize and preserve the urine for examination by the chemist.

Lastly the spinal cord should be removed and closely examined for hemorrhages, inflammatory lesions, tumors, softening; after the removal of the cord, examine the vertebral column for the evidence of fracture and displacements.

This would be a good time to go home, but unfortunately that which remains must be made presentable for burial. In conclusion, I can not refrain from again calling your attention to your notes; have the assistant read them over carefully for corrections (there are sure to be some), then having signed them yourself, obtain the signatures of all others present. Your report should be clear and concise, and the language such as a coroner's jury can understand. Technical terms should be avoided as much as possible. A copy of the findings and your conclusions should be forwarded to the chemist.

Two years ago December next, examination of materials from this class of cases was included in the work of our laboratory (no other State laboratory in the United States undertakes this class of work on a yearly appropriation), consequently a variety of material from man and beast has been received for chemical analysis, ranging anywhere in

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amount from 20 m. to a pail full. Of the thirty cases received, but a small percentage would stand a court trial. Few stop to think just what "examine for poison" really means, nor do they consider the amount of time required for these examinations.

WEIGHTS OF ORGANS.

	Weight.	*Proportion.*
Brain	45 to 50 oz.	1:45
Heart	10 to 12 oz.	
Kidneys	4½ to 6	
Spleen	7 oz.	5 " x 3 " x 1 "
Liver	50 to 60 oz.	12 " x 7 " x 3½ "
Pancreas	3 oz.	8 " x 1½ " x 1 "
Uterus	1¼ oz.	3 " x 2 " x 1 "
Ovaries	1 to 2 dr.	1½ " x ¾ " x ½ "
Valves of the heart:		
Aortic orifice		1 " diam.
Mitral orifice		1.8 " "
Pulmonary orifice		1.2 " "
Tricupsid orifice		2 " "
Wall of left ventricle		⅝ " to ¾ "
Wall of right ventricle		⅛ " to ¼ "

DISCUSSION.

A. B. Bisbee.—I have been very much interested in Dr. Wiltse's paper. He has covered the ground so thoroughly that he has left very little to say on the subject. The subject is of so much importance to us all that for the sake of emphasis, I will add that one of the cardinal points is that there is a vast difference between the ordinary autopsy and the one which has a medico-legal bearing. The ordinary

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autopsy is for the study of the lesions which have caused death. Here when the changes that have caused death are ascertained, the work is finished. In a medico-legal autopsy, the doctor must not only have formed an opinion as to the cause of death, but he must be able to state positively that every disease which could have produced death is absent. Every part of the body should be carefully examined and further every possible cause excluded. No matter if the death follows immediately after a gun-shot wound or the swallowing of carbolic acid, the autopsy must be carried out just as though there was no evident cause of death. Now, by painstaking work, he should prepare himself for any hostile criticism that may arise. The second point is who shall be present at an autopsy. Unquestionably the best method is to exclude all persons except the operator, his assistant and such officers of the law as are necessary. Just mere spectators and laymen, not officers of the law, can be of no assistance, and if they happen to be of the right type, do a great deal of harm to the operator on the witness stand. If physicians are allowed to remain,they should all be asked to sign the examiner's report, and if there is the slightest difference of opinion the matter should be cleared up there, satisfactorily to everyone present. The third point is, the examiner should see to it that he does not begin his work with a biased mind. Physicians are called into these cases quite late, sometimes when the body has been removed, the clothing taken off and some sort of theory is formed as to the cause of death. When the doctor arrives, this theory is thrust upon him, and unless he exercises a great deal of precaution, he is apt to pre-judge the cause. There may be some evidence that indicates poisoning, and he soon comes to believe that he must procure some certain organ which would contain it, but when the

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chemist reports there is no poison in the portion of the body sent him, it is too late. No matter how plain a case may have looked, the autopsy should always be thorough and complete. As regards technique, I will say nothing.

Now as regards the report. This is a very important matter. Such a report is likely to become a very important document. It should be dated by the operator and state in that report that every part of the body has been examined and the condition of every part of the body should be reported separately. The importance of careful reports was brought to my attention a few days ago. Two physicians were called upon to examine a body. The autopsy showed drowning. The case was so reported. The family thought this was not the cause of death and two of the relatives appeared before the grand jury and testified that there was a head injury. Before burial they discovered the head was smashed in—that was their expression. The physicians testified that there was no head injury, but this fact was not mentioned in their report. The State's attorney decided that further examination was necessary. The body was exhumed and the head examined before the two witnesses and it was found that the loosened calvaria was what they thought was the head injury. If the report had been properly put up, it would have saved a great deal of expense. By making a careful and complete autopsy and a clear, concise and thorough report, we can best perform our duties with regard to the medico-legal autopsy.

Dr.L.B.Newton.—I would like to add one thing to what has been said that is that the medical man is sometimes asked by the selectmen whether or not an autopsy should be made. I respectfully submit that in all cases, an autopsy should be made. In our own town of Bennington, a man

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was found drowned in a river. The man had been in poor health for some time and had been despondent and also had family troubles, and he was known to state many times to reputable persons that he wished he was dead and he thought he would be better off than the way he was. Well, he was found in the river and a note pinned to a tree was found signed by his name. When they found him, the selectmen were notified. As is the case under such circumstances, all of his neighbors and friends came in and talked the matter over informally. It was admitted and it seemed almost certain that the man had committed suicide. As the Board of Selectmen who look after the finances of the town like to keep bills down as low as they possibly can (I don't mention this fact as a new discovery, however), it was thought that an autopsy was not desirable for any reason whatever. There was one man there who scratched his head and thought. He demanded of the representative of the Board of Health that an autopsy be held and as a result, some things were disclosed, and one of these was the discovery of one of the most cruel murders ever perpetrated in the State of Vermont, and the persons who are charged with it are now in jail awaiting trial. Here was the mere possible chance. Everybody believed this man committed suicide, but the man who scratched his head thought differently. His own words had seemed so appropriate in that he thought he would be better off dead than he was alive. This goes to show that there should always be an autopsy performed when death is abrupt and the cause uncertain, and I think our physicians should throw their influence towards such an examination.

Dr. W. W. Berry.—This paper has been a very interesting one to me, and particularly where the speaker referred

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to the co-operation of the coroner with the expert who performs the autopsy. I do not think that a physician who is called or a town coroner should allow the body to be buried, where there was any question as to the cause of death without an autopsy. I think we ought to impress that fact upon the profession who have anything to do with a case which might be inquired into. The reader also mentioned the examination of the spleen; in the Fosburg case the separation of the poison from the spleen proved to be far in excess of that separated from the other organs. There was 18.2 milligrammes from the spleen and 28.4 milligrammes from the other organs. This is contrary to the teachings of the textbooks, but nevertheless it is true.

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Cerebral Apoplexy.

By J. W. Jackson, M. D., Barre.

In selecting this subject for my paper, I have done so, not with the expectation that I shall bring out any new ideas, or from any intimate personal experience with the subject, but I am in hopes that the discussion to follow may give us all some new points on a very interesting and rather frequent occurrence, with which the general practitioner comes in contact.

I intend to take the term in its widest sense and include any condition, due to arterial causes, whether hemorrhage, thrombosis or embolus, because the site of the lesion is usually the same and impairment or destruction of the function of these brain areas gives the same later symptoms, only the early symptoms and the nature of the beginning of the attack differentiating them.

Apoplexy is a term usually applied to coma coming on rapidly, as a result of cerebral hemorrhage. It is caused by a rupture of the lenticuloctuate artery. This artery is the largest and most important branch of the antero-median group of the ganglionic system, which system embraces all the branches arising from the Circle of Willis.

Its course is upward between the lenticular nucleus and the external capsule, it then turns inward through the internal capsule and terminates in the caudate nucleus.

In adults the most common seat is in the internal capsule, but a hemorrhage may be into the meninges and very

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rarely extend into the cerebellum. Apoplexy is more frequently met with in the old than in the young, owing to a degenerative and atheromatous condition of the blood vessels, set up by predisposing causes of long standing, such as gout,rheumatism,syphilis and any other condition leading to sclerosis, for in all cases, outside of embolus, we have to deal with arterial disease, without which condition no amount of strain would be likely to lead to a rupture of the blood vessels.

The etiological factors, therefore, usually found as entering into the cause of apoplexy are, atheroma of the cerebral vessels, as well as throughout the body, leading to sclerosis of other organs, especially of the kidneys and liver, and there is usually hypertrophy of the heart, especially the left ventricle.

Interstitial nephritis is present in most cases when the subject is over fifty years of age, and should be carefully sought for, even though there is absence of albumen and casts. A persistent low specific gravity is a most suspicious indication of arterial degeneration. These changes are slow and insidious, varying according to the habits of the patient, whether he is in the open air, takes exercise, controls his appetite for food and drink, and generally conduces to a slow or rapid outbreak.

Two other factors have a marked influence on cerebral apoplexy: they are alcohol and syphilis. If alcohol is taken in quantities beyond a point where the system can consume it, there results either an atheromatous condition or fatty changes in the blood vessels.

This is more likely to occur in persons who are habitual, steady drinkers, of sedentary habits, than in the excessive periodical drinkers. Many of these are unaware that

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they are using daily so much alcohol and taking into the system a poison, which their method of living never allows them to throw off.

Syphilis is certainly still more marked in its effects on the body, especially on the nervous system, and in its secondary effects distinctly shows itself in the brain. In the tertiary stage it has a direct influence on the fibrous tissues. causing fibrosis, which leads to inflammation of the arterial walls, producing thickening of the vessel walls and occasionally a gummatous infiltration in the muscular coat and a narrowing of the lumen. As a result aneurism with hemorrhage may occur or else a slow occlusion by thrombosis.

We will now consider the symptoms of a typical case of hemorrhage or embolus. The onset is usually sudden, accompanied with loss of consciousness, coma, stertorous respiration and hemiplegia. If due to extensive hemorrhage the coma is profound and lasts several hours, with a subnormal temperature and a full and incompressible pulse; if due to embolus the coma is less profound and usually short in duration, and the pulse shows little change.

In thrombosis, the loss of consciousness is slow, increasing as the occlusion becomes more complete, the patient often being able to notice the spreading of the paralysis; and again, there are occasional cases, where the consciousness is not affected, the paralysis and mental confusion being the only symptoms. If the lesions occur in parts of the brain remote from the motor areas, we may have symptoms of a still different type, as shown by altered emotional state, automatic crying or laughing, loss of memory, of time, of place and surroundings, the patient often insisting that he is in another house or room, although surrounded by his own personal effects with which he has been familiar for years.

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But the usual symptoms are paralysis of the lower part of the face and of the arm and leg, impairment of speech, either by loss of memory for names of articles, difficulty of articulation or motor aphasia; there may also be word deafness and word blindness. The face is usually flushed, lips blue, often twitching of the extremities, respiration snoring and a sputtering of the lips on expiration. The affected parts are rigid and if raised and allowed to fall, fall heavily; the urine and feces may be passed involuntarily. If the hemorrhage is not extensive enough to produce grave pressure symptoms, consciousness is gradually restored and the paralysis is only partial, involving only one side of the body, the muscles of the face and thorax usually escape.

The prognosis depends upon the seat and extent of the hemorrhage. A cortical hemorrhage, if in a young person, may subside without leaving serious sequels behind. The hemiplegia following a rupture of the artery into the internal capsule is usually permanent. If there is no improvement in the paralyzed member before the first month, contracture is sure to arise and should the clot not be absorbed, there may be great danger to the higher brain functions, with consequent loss of memory and the different forms of aphasia.

The treatment of an attack of apoplexy is to put the patient immediately to bed, making no attempts to arouse him by shouting at and shaking him, and enjoin absolute rest and quiet. It is a good plan to slightly elevate the head and turn to one side to prevent the tongue from falling back into the throat and closing the glottis. An ice-bag to the head may prevent further hemorrhage. If the pulse is full and bounding it is quite proper to bleed through the veins, that is to administer aconite, but the use of the lancet is not

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advised. If there is evidence of collapse, whiskey, strychnine and digitalis are called for.

If it is possible to make the patient swallow, the first thing to be given is one drop of croton oil with five grains of calomel in a little glycerine. Small quantities of peptonized milk, beef broth and light soups every three or four hours as soon as deglutition returns, or if necessary, the rectal feeding of peptonized milk may be resorted to.

Care must be taken that the normal amount of urine is passed; if not catheterization will be necessary. Early precautions to keep the patient clean will go far toward preventing bed-sores and turning the patient gently from side to side may lessen the tendency to congestion of the lungs. Bromides and the various cerebral sedatives will be necessary to control the restlessness.

Later conditions will arise, after six or eight weeks, when all symptoms of irritation have disappeared, requiring other methods of treatment, the galvanic current over the affected muscles for 15 or 20 minutes every two or three days to relieve the contracture, as well as massage and passive motion must be persisted in, and if recovery or only improvement should take place, the physician can do much in guarding against those things which will tend to a subsequent attack, which is quite likely to follow sooner or later.

DISCUSSION.

Dr. W. W. Berry.—As the time is rather late, I will make my remarks very brief. The Doctor has covered the subject in a very practical and thorough manner, but there are a few points I will bring up with regard to apoplexy. After being resident physician in a hospital of 1,000 patients and also in one of 500 for three and two years respectively,

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I have had a good opportunity to see quite a number of these cases of cerebral hemorrhage. I find that the inequality of the pupil is a very uncertain symptom. The pupils are alike in congestion; in apoplexy they are unequal. Apoplexy is rare before 40 years of age, thus age is a powerful predisposing factor.

During the three years which I spent in the insane hospital we had frequent cases, but I unfortunately never made any record. They are very interesting to us. I have seen three deaths during my practice. I have found that they have always been able to wait upon themselves up to the last.

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Some Observations on the Diagnosis of Small Pox.

By Charles S. Caverly, M. D., Rutland.

The experiences of the last four years in this country with small pox show that our idea of that disease, for most of us, furnished by text-books and in the lecture room, are sadly in need of reconstruction. The average text-book picture of the disease is scarcely recognizable. The old landmarks, by which we were accustomed to think the disease could be surely and quickly known, have repeatedly proven unreliable.

Whatever may have been the cause, whether modified by race, climate, or successive generations of the vaccinated, small pox, to-day in America, bears scant resemblance to the gruesome plague of the past.

With these changes in its clinical characteristics is coming a new literature of the disease. This has to do chiefly with its diagnosis. Bacteriologists have so far failed to give us the same help here that they have furnished in other infections, and until the causative germ is discovered we must recognize our limitations in this particular.

Though the type of the disease is so changed, and its diagnosis often so puzzling, there is the same demand on the part of an exacting public for the early and positive recognition of the disease.

If we are to trust the statements of recognized authorities, small pox should not baffle our diagnostic powers. Da Costa says: "Ordinarily the detection of variola is extremely

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easy, except at its onset." (Here we may remark that it is the disease of all others in which an exact diagnosis at its onset is important). The same author continues: "When the disorder is fully developed, all difficulty in its diagnosis ceases." Tyson says: "With the appearance of the perfect papule all doubt in the diagnosis ceases." The "perfect papule" we have learned may be quite exceptional. So recent authority as Eichhorst says: "The recognition of small pox is not difficult." These writers had in mind, of course, the regular, unmodified, typical disease. Their views are of little aid to us in the presence of the irregular, modified, atypical disease, with which we have of late had to contend.

The recent work of Hyde and Montgomery, on skin diseases, voices the feelings of a large part of the profession as follows: "The general demand, indeed, upon the physician for an exact and definite diagnosis of every case before its complete evolution, is founded upon an erroneous conception of the possibilities, and the sooner this is recognized the better for all concerned." This frank admission deserves careful thought. Brought suddenly face to face with a suspicious eruptive disease in everyday practice, the general practitioner is in a position to appreciate the meaning of these words. Briefly, he should refrain from giving an offhand opinion, he should frankly admit an honest doubt, and wait. This is frequently embarrassing. On an early and exact diagnosis often hinges the welfare of the patient, the safety of a critical public, and his own reputation. Yet it may be more embarrassing to be compelled later to confess to a mistake.

The following features have usually been relied on in arriving at a diagnosis in this disease:

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1. A history of possible exposure, and an incubation period of about 12 days.

2. The initial febrile symptoms, especially chills, fever, head and back ache, ending abruptly with the advent of the eruption.

3. The eruption.

A. Its appearance on the third day of the sickness.

B. Its appearance on the mucous surfaces, forehead, wrists and exposed surfaces first; its greater abundance at these points.

C. Its character; running a more or less definite course of papule, vesicle, pustule and scab; equally advanced everywhere; giving a "shotty" feel early, and later becoming umbilicated; involving the rete mucosum and sometimes the deeper layers of the skin.

4. The secondary or suppurative fever.

We have learned that any and all of these symptoms are sometimes lacking in the disease. Undoubted cases of variola have occurred, and not infrequently, which lacked every feature mentioned.

A young, unvaccinated girl of about eight years, was taken sick in a hotel, after traveling from a distant State and attending with her mother a series of church meetings. She had a moderate fever, nausea, headache and cough. On the second day, I learned that the patient came from a community where "Cuban itch" prevailed. She was promptly removed to the isolation hospital, where the next morning she was broken out with about 20 papules, some having the typical indurated feel, which quickly became vesicles, a few more soon umbilicated and became pustular, and all disap-

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peared in two weeks. After the initial symptoms, this child was never sick enough to be in bed.

The mother of this child, vaccinated in childhood, two weeks from the beginning of the child's illness, had for a single day a headache, and, though her temperature was not taken, she was sure she had no fever. In two days she had five or six papules on the forehead, wrist and one hand. These pauples developed into nothing more, were not in the least indurated, gradually died down and disappeared, leaving not even the reddish discoloration which marked the site of the eruption in so many of these cases. If this last case had been seen independently of the former, it would have required a vivid imagination to have seen in it a case of varioloid; and if the first had not given a history of exposure to "Cuban itch" it would surely have been overlooked, until many exposures had resulted.

An unvaccinated woman, living in a house where there was a case of varicella, had without marked prodroma an eruption on the body, face and a few pauples on the hands and legs. The eruption was rather irregular in its development, many of the papules becoming vesicular, some umbilicated and a few pustular. The eruption was about equally thick on the face and body. With the development of the eruption she had some fever and was in bed for several days. Here was a case with a positive history of having had varicella in childhood, never vaccinated, above the age at which we expect varicella, with an eruption presenting many of the features of small pox. On the other hand, the eruption appeared without distinct initial symptoms, there were papules, vesicles and scabs at the same time, and the distribution more nearly resembled varicella than variola. In this case it was deemed safe to keep

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the parties under a temporary quarantine until the nature of the disease was beyond question. It was finally decided in favor of chicken pox, a diagnosis which was verified later by getting a typical "take" from a single vaccination.

Contrasting this case with the two former, one is impressed with the vagaries of these diseases. The comparative mildness of many cases of small pox and the comparative severity of chicken pox cases with all kinds of variations in their symptoms, make the most expert diagnostician occasionally hesitate.

Perhaps the most reliable single symptom on which to base a diagnosis is the distribution of the eruption. In small pox the eruption appears earlier and is thickest on the exposed surfaces of the body, the forehead, face, hands and wrists, and on the ankles and feet. The reverse is generally true of chicken pox.

Still an eruption of the variolous distribution sometimes is deceptive. I have recently seen a puzzling case, a young lady of 26, of good personal history, and successfully vaccinated four months ago. She left her home in Boston early in September, and went to a mountain town in this State, where she spent her time in the fields and woods. Twelve days after her arrival she developed an eruption, confined chiefly to the hands, wrists, arms and face. She was positive she had no symptoms preliminary to the eruption, and had felt well ever since, except for a slight febrile condition a few days after the appearance of the eruption. On September 23, the eruption appeared as a brownish, very slightly elevated eruption on the back of the hand. This was rapidly followed by a fine papular eruption on the back of both hands and wrists, shading out into a scattered papu-

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lar eruption on the arms, a fine eruption of the same kind over the face, forehead and neck, and perhaps three or four isolated papules on the chest. There were also a few papules on the ankles. When seen by me September 28, with her physician, Dr. Marshall of Wallingford, she was feeling as well as ever. The eruption was dying down, there being some scabs where the papules had been scratched. There had been intense itching when the eruption appeared. Aside from the fine pimply eruption and the scabs, the back of each hand had a blotchy red patch, somewhat like an ecchymosis. This case showed the typical distribution of a small pox eruption. For this reason and the facts that she had come from a large city, where the disease has been quite prevalent, and that the elapsing time corresponded to that of the incubation period of variola, I hesitated to pronounce unequivocally upon its nature. With so reliable a symptom as the distribution of the eruption pointing straight to variola, the absence of less reliable ones did not seem to warrant a prompt negative diagnosis. So, while this is probably a case of dermatitis, due to ivy poison or some other local irritant, the conservative plan of watching it under quarantine seemed the only safe procedure.

The pitfalls that surround the diagnosis of small pox, are not all connected with these mild forms. Purpura variola, the most malignant form of the disease, is sometimes baffling to the diagnostician. As stated by Osler and other authorities, this type of small pox sometimes ends in death before the eruption appears. In the absence of the eruption, there is no guide to a correct diagnosis of such cases except the presence of other cases in the community, or a known exposure. The following case, unfortunate and instructive, occurred in the practice of Dr. S. W. Hammond of Rutland,

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who kindly furnishes me the notes of the case and the autopsy:

H. S., scale-maker, 34 years, of fair general health, was well enough to work April 26. He complained, however, of some headache that day, and the following day had more headache and added backache. Was first seen by the doctor the 28th. His symptoms then were headache, sacral pains, fever of 100 to 100.8 degrees, and generally those of the grip. The 29th, these symptoms were all aggravated, and there was blood mixed with the saliva; throat very red and congested. His face assumed a dusky hue, and was somewhat swollen. On the 30th he had a distinct eruption suggestive of measles, very dark in color, on the forearms and chest. This spread rapidly over the body, face and extremities, and was especially marked on the inner aspects of the thighs. He began to bleed, on this day, from the urethra. Prostration was very pronounced. I saw the case on this day, and noted the petechial injection of the skin on the body and thighs, with slight marking of the face, and the general dusky hue of the whole body. There was little fever, but great mental dullness. The eruption was scarcely any if at all elevated. May 1, the symptoms were all emphasized, and there was considerable hemorrhage from the mouth and urethra. On this day he was taken to the hospital. May 2, face was more swollen, arms, trunk and thighs became a mass of ecchymotic spots of the size of a pea to that of a dime. During this time his fever was slight, and he still complained of his head and back. About midnight he became delirious, his temperature crept up, and he developed pulmonary symptoms and died at 5 A. M. May 3d, after six days' illness.

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The clinical features of this case were those of purpura hemorrhagica. The autopsy showed both lungs well congested, the mucous surfaces of the stomach and intestines injected with dark blood, spleen enlarged, the pelves of the kidneys full of clotted blood and both kidneys enlarged, the liver somewhat enlarged with ecchymotic spots beneath the capsule. None of the dozen or more physicians who saw this case or the autopsy suspected that it was other than one of purpura hemorrhagica.

There was at this time one case of small pox in the city, and the only one there had been in Rutland County for many months. This was a man who lived more than a mile from the residence of this case, though he was employed at a fire station next door. It was not known that there was more than a passing acquaintance between the men, nor could any common source of infection be discovered.

However, two weeks after the death of the purpuric case, the sister of the patient, who had seen him during the first days of his illness, the undertaker who cared for the body, and a nurse at the hospital developed variola. Then for the first time the true nature of his sickness was suspected. This experience furnishes food for thought. When small pox of this malignant type is possible without any eruption of the small pox appearance, it behooves physicians to be constantly on their guard.

The diseases with which small pox has been oftenest confounded are measles, scarlet fever and the grip (in its early stages), impetigo, syphilis, acne and drug eruption, eczema and chicken pox. Beware of the latter. Probably more mistakes have been made in connection with chicken pox than with all the other diseases together.

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Each case is a study in itself. This is especially true when the disease is not known to exist in the neighborhood. The presence of other cases always furnishes important confirmatory evidence.

When, however, the disease is so widespread through the country as during recent years, it may appear anywhere most unexpectedly. Persons exposed on the streets of a large city, or in a distant State may travel far before the incubation period expires. They may bring small pox under the innocent guise of varicella or some other simple affection. Physicians will therefore always remember the danger of fresh importations. The first case is always the key to the situation.

My object in presenting this paper is to call attention to the anomalies of the disease, and to urge caution in rendering an opinion on the diagnosis of doubtful cases. There are some symptoms that are very reliable in arriving at a diagnosis; such are the initial febrile attack ending abruptly with the eruption, the distribution of the eruption and its earlier appearance on the exposed surfaces of the body, and its uniform development.

Other symptoms which figure prominently in the classical disease, such as the character of the eruption at its various stages, the incubation period and the appearance of the eruption on the third day of the sickness, and the secondary fever, are less reliable.

Still, when we are liable to encounter this modern type of the disease which has caused so much controversy of late, a type which is decidedly atypical, a frank confession of "I don't know" is the only safe refuge of the physician.

It is unfortunate that this is so. It is still more unfortunate to subject a family to the annoyance of a needless

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small pox quarantine, or on the other hand to release an innocent looking case of small pox on an unsuspecting community.

So I suggest that we recognize our limitations and act accordingly. The disease cannot yet be quickly and surely diagnosed in every case. Hyde and Montgomery are right when they say that a demand for this "is founded upon an erroneous conception of the possibilities."

Doubtful cases should be held in quarantine for observation. The true nature of the disease will declare itself if we are patient. The friends and the public may be impatient, but in the end they will applaud our honesty.

DISCUSSION.

Dr. D. D. Grout.—This is a subject which at the present time interests me very much and I feel that it ought to interest every man who attempts to practice medicine, whatever may be his specialty. The infancy of my professional life was passed during a small pox epidemic. I began practice during the epidemic that prevailed in '72 and '73 and '74. I supposed I knew as much about small pox as Webster knew about spelling; I found out recently that I was mistaken. Six months ago my attention was called to a case which, without any trouble whatever, I diagnosed small pox. Another case followed and my diagnosis was questionable, and it is even questionable to me to-day. Four weeks ago tomorrow, a couple, a man and his wife, and little grandson, arrived in our village from Washington, D. C. The old lady got off the train and was pretty busy visiting. She went to her daughter's to pay her a visit. In the morning after her arrival, she was very sick and I was called. I thought she was probably tired out from her long journey,

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as the only symptoms were increased temperature, which was 103, and excessive vomiting. She had neither headache, backache, nor any other pain. The idea of small pox at once came into my mind, but I gave it little thought. Her temperature remained about the same for four or five days. The second day she had diarrhea. In five or six days she began to be convalescent. I had not spoken to the family about small pox. The little boy went into the house, of course, although he did not go into the room. I went in on the sixth day, took her temperature and chatted with her. The room was not well lighted. The next morning I paid a similar visit. On arriving home that afternoon I found a call awaiting me and I found upon arriving at this house that there were several neighbors there visiting. Her husband said she had a nervous attack, but she had gotten over it. The light was turned down. I felt her pulse and went out. The next day I went in, and to my surprise and disgust, I found her in a profuse eruption. There was no question about the diagnosis then. Dr. Holton saw it, too. There was never any increase of temperature after the eruption came out. It was not so profuse on the face as on the soles of the feet and hands. Twelve or fourteen days after, the little grandson was taken down in almost the exact way the old lady was. His temperature was 103 and he vomited excessively. He had no chill or backache. After two days in that way, I found him out of doors at play. A careful inspection showed several papules on his forehead that had gone through the various stages of small pox, although he was able and did play out of doors the next day. He had never been vaccinated. The principal feature is that there were five others in the family, one a little girl who had never been vaccinated. None of the rest of the family have shown

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any symptoms whatever and it is four weeks to-day the old lady came down with it. Here were two or three in the family who had not been vaccinated for fifteen years and one who had not been at all,and all in the same small house and it was impossible to keep them isolated, as the sick room adjoined the living room, and that girl with whom I experimented has gone along without taking it. It caused me a great deal of embarrassment to think that I heedlessly let that little boy come in contact with the case.

The ordinary description as given by text-books is more mis-information than practical information, as far as the epidemic of the last few years has been.

In one of the last issues of *American Medicine,* Sept. 27th, 1902, there is an article by Dr. Frederick H. Dillingham of New York city, and if you want to get some pointers, I know of no better source to go to than to that article.

Dr. P. E. McSweeney.—I wish to relate a little experience I have had with small pox. I was sent for one Sunday night to go and see a patient about one hundred feet from my office. I went down there, and up to that time I had never seen a case of small pox, and I must say I knew very little about the disease. This patient was about eight years of age. His face was completely broken out. I afterwards learned that it was the vesicular stage of small pox. I remained there a few moments. I said I would be in in the morning. I did not sleep very much that night. I was considerably alarmed. At 6:30 the next morning I called up the health officer and told him that I thought I had a suspicious case and I invited him to go there with me. I had two or three children and a wife and he was in the same boat with me, but he said that he would go. When we examined it, he said he thought it was a case of small pox. We called

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in Dr. Lund and he at once pronounced it a case of true small pox. It was the first case so far as we knew in the city. The same afternoon, I was called to see another case. It was not quite so far advanced but to me they seemed the same, and I called it small pox. They were all ready to jump on me for calling it small pox. Dr. Lund was driving by and I called him in. He laughed at me and said it was not small pox. I said we would keep the patient in a semi-quarantine. They were not quite satisfied, so we called in three or four others and they said it was not small pox. The next day I was more convinced. Then the story went the rounds that we should be arrested for calling it small pox. We called in twelve or fourteen doctors, and the older men were not willing to wait, but said it was not small pox. The reason they gave for it was that we did not have a stink which we get from true small pox. This child was in the sixth day of the eruption. I had in the meantime learned all I could. I remember one Thursday afternoon it looked as though Watkins and I would be in a riot, so we determined we would send for the State Board of Health and I immediately telephoned for Dr. Caverly. We had quarantined the patient. Dr. Caverly came up and fortunately for us he backed us up and said we had small pox. I learned that we do not have the stink spoken of until the tenth day and I said if you will come in here on Sunday at 10:30, we will agree to have a stink for you, and they did come, all of them save one, and we had the satisfaction of hearing every one of them say it was a typical case of small pox. We had 130 cases after that. They went through that heavy backache, slight eruption and most of the patients felt well up to the eighth day, when the pustules appeared and a slight rise in temperature. One of these men felt confident that we did

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not have small pox, because we did not have the second temperature. We went through that epidemic of 130 cases with only one death, and for days and weeks the community was aroused. Yet for all that, I earnestly believe up to this present time a great proportion of the people of Burlington still say that we did not have small pox. I met a young man who had the disease, and I asked him what he thought of it, and he said if it wasn't small pox, I have had all I want of it.

I should hate to be health officer during an epidemic of small pox, for Watkins was reported to the chief of police several times because he reported there were some cases of small pox in the different families. I think between us we discovered about one-half of the cases in the city. I always called Watkins, for I knew he would back me up, and he always called me, for he knew I would back him up. There was one house which we did not quarantine, and I believe there was a case there of a little boy seven or eight years of age who had attended the kindergarten school. He had two or three little pimples on his face, but he went to school right along. Finally his neighbor in the school came down with similar symptoms. Then there was a man who had backache. We were called but did not quarantine him. When we were driving away, a neighbor came out and said: "Why don't you quarantine that man?" I told Watkins to drive along, but he didn't; he stopped to talk with her and finally we were both going to be arrested for not quarantining this patient.

Dr. E. R. Clark.—I have had a little experience with small pox which I wish to relate. Dr. Caverly can well testify to it. Two years ago this fall, I told some of my people we would have small pox before the winter was through

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and I told them it was for this reason: There were quite a number of young men and young women in that locality who were away in New York State attending school where the disease was prevalent and when they would come home, I felt they would bring the disease along. The first case was in the town of Poultney, but was not recognized. Soon a neighbor who had not been out of town came down with it. The next thing I knew, in the month of March, I had been in Sudbury, when on my way home a family called me to see a young man and his wife who were both sick. I found them both sick in bed, complaining of backache and headache. The wife was nauseated but the husband was not. The next day when I called the wife was so delirious that she did not remember that I was in the house the night before. No one had any reason to believe that there was any small pox in the house, but it went along for two or three days. I called Tuesday and I saw there was a breaking out of some kind, but did not think it was anything. On Wednesday I called again and although I had never seen a case of small pox up to this time, I had read quite a bit regarding it, and was now convinced that I had a case. I telephoned to Dr. Caverly and he came over Thursday and pronounced it a case of true small pox. How did these people get it? It seems a sister of this young man who was sick, about two weeks previous, had been sick a little. Dr. Caverly and I made some inquiries and we found on her neck and on her arm there were three or four spots which Dr. Caverly upon examination recognized as small pox spots. There were five or six children in the house and every one had that mild form of the disease. Not one of them was sick in bed. They all recovered without any difficulty. On a certain Wednesday I began to feel mean. I had no distinct

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headache or backache or nausea, but a fever and I had a fever on Thursday; on Friday not as much. On Sunday I was re-vaccinated. On Tuesday my friend Mr. Wellman from Manchester Center, hearing of my sickness, came up to see me. When I went to bed that night I found a little spot on my face beside my nose. On Wednesday night when I was preparing for bed, I found on my arms some spots which were suspicious looking. I remarked to my wife that I thought I was coming down with small pox. She laughed at me and said I only imagined it. The next morning I sent for Dr. Caverly. He was not able to come up that day. I staid in my room and told my wife not to let anyone in or anyone out of the house. I staid in my room for twenty-eight days. I had forty pustules in all. With my sickness we cleaned up the epidemic. There were about nine cases in all. This went along until the month of June, when we had another importation. In all we had about twenty-five cases. In the first batch, there were none very sick. In the second lot we had two quite serious cases, although none of them were pitted.

Dr. D. D. Grout.—Now about this stink. We do not get any characteristic odor of small pox in any non-suppurated cases. Now we hear about people making diagnoses before they get into a room, but I have never put any stock in it.

Dr. H. R. Watkins.—I am very sorry to have missed Dr. Caverly's paper. The question of diagnosis of small pox is very interesting to me, and I don't feel that I ought to attempt to say anything, as I shall probably say what has already been said.

There are a few points that were peculiar in our epidemic. Most of the supposedly typical symptoms were ab-

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sent in those I saw. I do not remember of having, in any case, a chill. Most of the patients were in the vesicular stage and some of them in the pustular. The history was very uncertain. The severe frontal headache and lumbar pains were almost entirely absent and no symptoms were as severe as I should expect to get in reading the history in our standard text-books. The most marked symptom was a general feeling of malaise. Another point is that while a great many had a high temperature, in all the cases I saw early in the sickness, the temperature fell after the eruption appeared, and there was no secondary fever.

It seems to me that these cases which we had in Burlington were not typical cases, in the majority, such as we read about in text-books. I have not the slightest doubt but that we had small pox in a mild form.

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After Forty Years with the Neuroses.

By A. J. Willard, M. D., Burlington.

It is a little more than forty years since I had my first personal experience with one of the neuroses—an experience which has lasted up to the present hour. For a year or two I suffered from it in its fullest severity, but afterwards only mildly, but with occasional reminders of its previous existence and lasting influence. And now, as I look back over this long period, I see that my individual acquaintance with the special form from which I suffered, neurasthenia, has been of great value to me. For, first, it has given me a clear insight into the nature of neurotic diseases generally, which I am confident I should never otherwise have obtained and, second, it has helped me wonderfully in the care of my patients, enabling me more intelligently than I could have done without this experience, to give them a moral and sympathetic support, such as many of them have been pleased to acknowledge, in a way that has been truly gratifying.

After this long experience then, it would seem that one ought to have something worth recording and relating, and it is under the influence of this impression that I am moved to make these memoranda of certain points that have frequently come to my mind in these days of comparative leisure—the hearing of which I trust will be as interesting to you as the relating of them is pleasant to me.

The very first point that comes prominently to me in this review, is the *peculiar attitude of the profession* towards

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neurotic disease. It is an attitude of indifference, or disbelief, or ill-concealed dislike to having anything to do with the treatment of them. Now the fact is that one of the first cases that the young doctor has to deal with, is often that of a neurasthenic female, or a victim of neurosis in one form or another. Then, all along through his practice, neurotics are constantly coming to him, most piteously appealing for relief, and he finds himself poorly prepared by education or his hospital experience to cope with their malady. Hence he is disposed, when consulting his inclination, to dismiss these cases summarily as not worth his attention, being only delusions of the mind or hallucinations of the fancy.

I had recently under treatment a striking illustration of this very fact. It was a neurasthenic case, a young lady from a Southern city, who was unmistakably ill and who had been from time to time under the care of several prominent physicians for nearly a year, every one of whom had declared that there was nothing the matter with her except her nerves and that all she had to do was to "brace up"—to exert herself to live more quietly and hygienically—to insure her recovery to health. Now it may be true, as I think it was, that nothing was the matter with this young lady except a nervous trouble, but the evident insinuation given positively on every hand that the difficulty was not of so much importance as to require medical interference of any really scientific character, was both a mistake and a cruel blunder.

Pitiable indeed is the life which the poor neurotic leads when relatives and friends, taking their cue from the doctor, give the poor victim no peace by reason of the constant insinuations that the evident sufferings are unfounded and unreasonable and that one ought to be ashamed to "keep up such a fuss" about nothing—so that at last it becomes a posi-

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tive relief to the miserable sufferer when the walls of a sanitarium afford an asylum from what may be regarded as little less than unfeeling persecution.

And this recalls me to another case, that of a young lady whose appearance seemed to indicate perfect health, but who was really suffering from nervous exhaustion in one of its worst forms, who, on my asking her why she shed tears so copiously when she entered the door of my little "Home," replied with these significant words: "Because I shall not now be incessantly nagged by being told that no one can be very sick who looks as well as I do."

I was for a long time in doubt as to the cause of this seeming indifference to its nervous cases, on the part of the profession, but have decided, to the satisfaction of myself at least, that it is owing chiefly to the *subjectivity** of the nervous symptoms. Indeed, I have thought that if I had not, in my own experience, felt many of the symptoms described by nervous patients, I should probably have been as incredulous respecting their actual existence as are so many of my brother doctors. It is largely because I have "felt the same" that I know positively that nervous symptoms are no fancy. It is too much the habit of mankind to bring to the test of actuality what is discernible only by the senses, forgetful of the fact that there is a vast realm of acknowledged reality which lies quite beyond the sphere of the senses,—with which the senses have very little, or in fact, nothing to do. Thus it is I imagine with the multitudinous fugitive and indescribable feelings,—strange uneasiness and peculiar pains, the "fidgetings" and all that sort of thing,—which I need not particularize further, but which are so graphically described

* Dr. G. M. Beard. Nervous Exhaustion. Page 4.

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by our nervous patients and which are the source to them of such incessant unrest, not to say torment, that they come to us begging for relief, and to them we too often give only incredulity, or utter inability to give relief, or unwillingness even to make any serious effort in that direction.

But, it may be asked, how is it possible for physicians to appreciate these cases in the way you describe? You surely would not expect that they all should have a touch of nervous prostration as you have had, in order to understand its nature? Of course not. But it is possible—and each physician should make a point to see that it is actual in his own case—to credit the statements of reliable persons and examine into the cause of their peculiar conduct and so bring both words and behavior to the light of fair and honest investigation. Let the doctor ask, "What do these things mean?" True, they seem trifling, inconsistent, incredible, absurd, contrary to all experience, still they come from parties who in every other respect are reliable—whose statements would be taken in any court of justice without the slightest suspicion, and whose language in the ordinary intercourse of life is never questioned as to truthfulness. Proceeding, therefore, on this assumption, namely, that the statements made by the particular patient have an unquestionable foundation in some fact, let the doctor proceed to find out, first, the fact, next, the significance of that fact, as he would in any other process of investigation. Of course his method of procedure would be somewhat different from what it would be in an obscure case of digestive or bronchial trouble. But I hold that the necessity of a thorough examination is just as imperative here as there, and that all the facts bearing upon the case should be patiently and faithfully collected and compared before any conclusion is reached. It

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has been too much the way with us to make only one call, and that possibly a very short one, suffice to diagnose a neurotic case and prescribe for it. There are several reasons why many calls should be made and the various results compared. The moods of the neurotic are variable. The statements are conflicting, not so because the truthfulness of the patient is suspicious, but by reason of failure of memory, or lack of appreciation of what is important to tell. For these and other reasons it often happens that some of the most important facts bearing upon the case are withheld until the very last, or perhaps only elicited by the merest chance.

Another cause of failure is the tendency on the part of physicians to regard the various neuroses as *only symptoms of some organic disease.* This is especially the case with our female patients, who, when they come to the family doctor with their nerves "aflying" are supposed at once to be afflicted with some peculiar female trouble—which is indeed unhappily too common—and so the poor woman is either turned over to the gynecologist or treated on the same lines by her own physician. This kind of treatment is often efficacious, I will admit, but it is quite as often not efficacious at all, the reason being that the seat of the trouble is not there. It is not at all organic, but is wholly a functional disease of the entire nervous system. This is the "fons mali" and so, as these diseased nerves go everywhere, the nervous symptoms appear everywhere, and we therefore have the reflex irritations of the various neuroses.

This omission on the part of the profession to recognize and bear constantly in mind *the fact that there is an all-pervading constitutional, functional disorder of the nerves,* is the primary source of disappointment in the treatment. Fail-

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ing thus to diagnose correctly the facts in the case, how could there be other than failure in the treatment? When a man returns from a long mountain tramp so utterly "tired out" that he would be glad to be allowed quiet and rest before anything else—when, in fact, he is having an acute attack of "nervous exhaustion," there being an utter loss of nerve-force which has been all used up on the mountain tramp—how absurd and useless it would be to treat the poor fellow for some organic disorder in his aching limbs when the fact is the nerves of the whole body, as well as of the legs, are suffering from a nervous collapse caused by fatigue! Here, then is one great difficulty in our diagnosis and treatment of that most frequent of the neuroses, neurasthenia, whether it comes to us under the name of "nervous exhaustion" or "spinal irritation," or some one of the other many names which we give to this kind of nervous disease.

From my observations with the neuroses, the one that is typical as well as the one that is most common, is neurasthenia, and it is this one that I have particularly in mind when I deprecate the lack of attention which it has been the wont of the profession to show all nervous diseases. But there has been *a change for the better* in this regard during the past few years.

When a while ago I opened my little "Home" to be devoted solely to the treatment of neurotic cases, I stood almost alone in such an enterprise. Dr. Weir Mitchell discouraged my purpose to open a sanitarium for this specialty and strongly advised against it, thinking that nervous invalids with such peculiar mental symptoms would be a poison to each other when assembled together under one roof. But in spite of this discouragement I carried out my plan and have been gratified both at the measure of my success therein

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and in seeing, also, the large number of similar institutions that have sprung up all over the country. This indicates most clearly a healthy reaction in the behalf of the nerve*less** invalids,— a reaction which has been so firmly established that I think we can feel they will no longer be so egregiously ignored as they have been in former years.

The first and chief cause of this reaction has been the great *work of certain prominent neurologists,* among the first of whom stands that eminent scientist, Dr. S. Weir Mitchell.† His famous and now historic "rest-treatment" has been a veritable boon to multitudes of neurotics and although it has often been pushed to extremes, and is not now used so much as it was at first, is really one of the best contributions that we have to the successful treatment of nervous exhaustion. And I wish here thus publicly to say that I owe a great deal in my treatment of neurotic cases in the past, to the ideas and principles advanced by Dr. Mitchell and which he has so clearly brought before the profession in his admirable book entitled "Fat and Blood." My own experience, however, has been that a modified form of the "rest-treatment," making a partial use of rest, massage and electricity, combining it with other appliances,—especially fresh air and sunlight,—has done for my patients the most good. And with respect to this latter, while dictating these words at my Summer Cottage on the lake shore, I wish em-

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* I am disposed to regard the word nerve*less* as better than nerv*ous* to apply to this class, for it expresses their condition more exactly and is not open to the opprobrium of the other word.

† Most honorable mention should, also, be made in this connection, of Dr. Geo. M. Beard whose service has been second to none in its value to the medical profession. His book on Nervous Exhaustion gave an impetus to the study of this disease that caused almost a revolution in the medical mind. This book has proved an indispensable "*Vade Mecum*" to me.

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phatically to give my testimony to the great benefit which has accrued to very many of my patients whom, during the summer months in years past, I have put under the healthful influences of life here out doors. Into how many of them has this kind of life infused new vigor when everything else had been tried in vain!

Another source from which we can see a change has come to the profession with respect to nervous disease, is the conviction which has at last dawned upon the medical man that *in dealing with the neuroses he is dealing just as much with a positive disease as when dealing with fevers.* For a long time this was different, for, when a nervous patient was portraying to his physician his strange sensations, fleeting feelings, morbid fears, hypochondriacal symptoms, shooting pains and continuous aches and all that sort of thing, these were supposed to have their seat, if not purely in the imagination, yet not in any actual, substantial malady. Or, if an organic disease was suspected as the origin of some of these strange sensations, that alone was treated. And when, after that treatment, the abnormal sensations continued, or, if no organic disease could be found as the source of the miserable feelings, then the poor sufferer was turned away and regarded as the victim of his imaginings.

But it is not so now to the extent that it was once. Now, it is understood and admitted very generally that a functional nervous disease may be an all-pervading actuality,—permeating throughout the whole body, each and every part of it, the very minutest organ as well as the very largest, and so affecting each and every part adversely when affecting it nervously,—producing anomalies of every kind and hue. Hence the strange sensations of hearing, seeing, feeling and smelling. Hence, the manifold and seemingly tri-

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fling ailments to which we are asked to listen with patience, and to which we ought to listen with the same attention as we would to any other ailment, whether it be pulmonic, hepatic or digestive.

The doctor now understands this as he never did before, and he sees clearly that *a long neglected nervous trouble may produce some real organic trouble* as well as multitudinous nervous symptoms, and he is ready to appreciate the fact that it is not at all unlikely that the organic trouble will not, as it cannot, be cured, until the nervous trouble which is the cause, has first been attended to and removed.

Let me next make a brief enumeration of some of the important *practical points* which have been brought forcibly to my attention by my past experience with the neuroses.

And first, we physicians, are to *expect naturally and treat patiently every kind of nervous symptom,* in every part of the human organism. This we are to consider as the result of that abnormal action, which means a really diseased condition of the nerves reaching and consequently affecting that part. We are not to be surprised or skeptical at anything our patient tells us as to his feelings in that region. We are never to say, or to look as though we thought, when our patient enlarges upon his various strange sensations, "Oh, nothing is the matter with you. It's only your nerves."

Second. We are always to bear in mind that *there is an actual, active cause* for each and every case of neurosis, whether we can discover that cause or not. The various causes which are supposed to operate in different cases, we have not time now to consider fully,—only insisting that we must if possible find out which one is active in any particular

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case. This is clearly of the utmost importance, and just here it might be of service to some of you for me to say that, as the result of my study of nervous cases at the bedside, together with what knowledge I have gained from other sources,—and I have not failed to obtain information in every available way that has been open to me,—I have classified the prevailing causes of the neuroses in four,* not altogether distinct but largely separated, groups.

The first and most common cause I regard as the *excessive use, or abuse, of nerve-force,*—that all pervading and most potent power in human activity—whether that activity be mental or physical.

We may regard the brain as the great human battery which generates this nerve-force, not unlike the galvanic or faradic battery which generates our electricity. Now, we all know that our batteries must not be overworked, for if we do use them beyond their capacity for generating electricity, their current will soon slacken and then die out altogether. We say, "They won't work at all." In fact they have nervous (i. e., electrical) exhaustion or some other unnatural irregularity, if not inactivity.

A second cause of the neuroses that is quite general, is *a lack of nutrition to the nerves.** The waste of their work is not supplied, and so inevitably the nerve-cells shrivel and the nerve-fibers dry up. This also may be compared to the results found in our batteries when we fail to supply them with the proper fluid, in the right quantity and of good qual-

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*Acknowledgments are here due to Dr.T.D.Savill,London,Eng., whose Work on Neurasthenia is one of the latest contributions on that subject. William Wood and Co. have just issued it.

* General Anaemia and local Hypedaemia would have a place here.

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ity, which is essential to their being in uniformly good working order, as indeed to their activity at all.

The third cause of the neuroses now goes by the name bestowed very properly as the *"Toxic."* Some kind of poison has invaded the blood-current, generated from within the body or introduced from the outside, and this poison, as we cannot fail to see, must produce irregularities of the most varied form when acting on the nerves, which ought to have a healthy blood for a proper performance of their functions.

A fourth and final cause of the great prevalence of the neuroses, can be called, for want of a better name, *"Shock."* This, in its effect upon the brain and nervous system, is as though our batteries and the whole paraphernalia of our electrical apparatus should receive a "severe shaking up" or some minor mishap, as men do in a railway accident or by some decided partial injury. Here, either our batteries may be supposed to be "all broken up," or their cells only cracked or their "leaders" impaired in their conducting power.

Can we not now clearly see how necessary it is for us first of all to investigate the probable cause of any given case of neuroses? Can we otherwise institute any intelligent treatment with any prospect of success? Suppose, for illustration, that it be nervous exhaustion that we have in hand. If we find that the active cause is solely, or largely "toxic," and then we go on to treat it as though it were purely nutritive, how signally must we fail in the result! For a toxic case, an antidotal or eliminative treatment would be indicated,—in some prompt manner a poison must be removed or neutralized.

Not so, of course, if the cause is of a digestive or nutritive nature. O! it does make "all the difference in the

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world" with our patients, who are afflicted with any form of neuroses, that we find out, first of all, before we begin any treatment, whether their nerves are being poisoned or starved,—whether those nerves are only "tired out," or are actually "worn out," or have been only badly "shaken up."

A third practical point is this: Since Christian Science and some few other "fads" are meeting with undeniable success in the management of the nuroses as well as other diseases, we must admit, and act on this admission, that there is *something in mental therapeutics* which we ought to recognize, investigate and utilize more than we are wont to do. Psychotherapeia promises much for the future.

A fourth practical point. We should be more careful than we are accustomed to be, about *distinguishing between a functional and organic neurotic disease.* For, if we can feel sure, from the fleeting and numberless other peculiar characteristics of the functional malady, that it is chiefly, and perhaps only, this form which now is present, then it is possible for us to give our patients the benefit of the greatest encouragement,—that which will help wonderfully in bringing them out of their difficulties. Assuring them that if they will only persevere in a judicious course of treatment they will in all probability some time be well again, we can do it with the clearest of consciences, for, according to my experience, a functional nervous disease is, of almost all others, the most amenable to successful treatment.

Another and a fifth practical point, which my experience has taught me, is that it is *not a matter of indifference* whether or not a neurotic case is properly attended to. For herein a great mistake is made, especially in cases of nervous exhaustion, which the profession is most apt to neglect.

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For just see what sequences often follow and almost inevitably follow, long standing and neglected neuroses.

One is *invalidism*. This, perhaps, is the most common, and though not so dangerous in its effects and not so disagreeable in its exactions, is yet an incubus upon any household, and in time endangers the vitality of the strongest member of it. What an array of victims of invalidism is recruited from the ranks of slighted neurasthenics!

Another sequence is *melancholia*. How often have I seen this to be the undoubted consequence of a disregarded neurosis. Then, there might follow and do follow those many distressing *neuralgias* and tedious *paralyses*.

Another sequence may be *insanity*. The neuroses are a sort of border-land, and often it is only a matter of time, or by the merest accident, that the poor victim of a neurosis shall step over the line into the blackness or violence of that horrid land of mental aberration.

And now shall I mention *inebriety* and the *drug habit?* The neurotic feels that he *must* have something to stop the dreadful sensations that his tormenting disease causes him, and he *will* have that something if he can get it. Thus it is that most easily and insensibly and almost inevitably, before he knows it, perhaps, he forms a "habit" of taking what will relieve him most effectually,—a habit, the evil of which it is impossible for us to estimate.

When bringing this paper to a close I had thought that I would try to *enumerate some of my methods* in the treatment of the neuroses during the past years that my work has been to do with them exclusively. Supposing, then, that I have before me a neurotic pure and simple, what does my experience teach me to do? I answer, *first*, to get *the confidence of my patient and then administer a cathartic*,—a

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combination at which you may smile and perhaps demur. But both are important at the very outset, which the more so, I am in doubt. I only know that the first is always indicated and should be my primary object,—indeed before anything else of a decisive nature is started in the way of treatment, for, unless I have secured my patient's confidence, I have found that further procedure is almost useless. But I have, also, found that a constipated condition of the bowels is almost universal in my neurotic cases. Hence I see that I have been making it well-nigh a matter of routine to relieve that at once.

Again, inasmuch as my patients are commonly afflicted with *insomnia,* my next step is to remedy that condition in some way,—to secure good and sufficient sleep, which happily now-a-days is not a very difficult thing to do.

Once more, because very many patients have come to me in a half-starved state by reason of some supposed inability to digest food, I make such *take nourishment* immediately, frequently and continuously.

Some of you have, perhaps, begun to wonder why one who, according to popular nomenclature, has been running a "Rest-Cure" so long, has failed to mention the fact that before he does anything else, he *puts his patients to bed,* and in that, or some other way attempts an enforced rest. But I have found that such a procedure is not always wise. Many of my patients indeed expect it when I am obliged to disappoint them.* But in each instance I try to decide whether or not in that individual case it is rest or exercise that is

* One young man who came thinking that I should put him to bed, was quite disgusted when instead I started him off on a tramp to St. Albans, and then made him turn peddler. But he got well.

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indicated. Now this brings me to what is in reality my *very* first step, one, indeed, that I suppose I ought to say I take at the outset. *I study my case.* I endeavor to leave no method untried which shall bring out the facts,—all of them, some of them not known indeed heretofore to the patient, some unrevealed because of their supposed insignificance, some kept back or concealed out of pride or shame, or for other reasons.

Afterwards, and then only, when I think I have found out the true "inwardness" of this particular case, do I decide what to do. Each one is treated individually and on its own merits. I do not suppose I ever handled any two cases, of the same type, in exactly the same way.

And now I must bring to a close this to me interesting review of my past professional life with the neuroses. Before doing so, however, you will naturally expect me to say something about my experience with *remedies and remedial agencies,* especially such as I have found most useful.

Briefly, then, and by way of preface, I am *not a blind admirer* of the newer remedies and the later methods. Some few of the older ones I have found to be better. For example, I have discovered nothing as yet equal to a judicious use of the bromides to produce sleep. I have indeed obtained from some of the modern hypnotics very valuable results; still, after all, you know we handle the old weapons, to which we are accustomed, much more effectually than the newer ones, which may undoubtedly be nicer and sharper, yet which we find ourselves handling but awkwardly.

Then, among the older remedies there is opium. But it is a very dangerous remedy, though it has proved invaluable to me. I have been very cautious in the use of it, never allowing myself to employ it or any of its derivatives when

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a substitute could be found. Sometimes it seemed impossible to get a perfect substitute. In that case, codeine has served me best and I regard it as the only preparation of opium which is absolutely safe to use, for I have yet to hear of a victim of the codeine habit. As succedanea for opium and morphine, I have never obtained from any of the later remedies so good results as I have had from the classic cannabis indica, hyoscyamus, and conium.

But why should I dwell on remedies, old or new, when my experience convinces me that they are not what have cured my patients? They have done, indeed, a good preparatory work and a supplementary as well. They have helped to lay the foundation and strengthen the superstructure. They have given a brief quiet to the nervous system and a little rest, while Nature could rally and rebuild. Or better, they have prepared the soil for Nature to plant the seed. Or better still, they have removed the rubbish of the old house and made the place clear and clean for the new building, and they have propped up the staging around the edifice, as it were, on which Nature's workmen could do their work safely, expeditiously and successfully. Metaphor aside, remedies have been, not so much remedial, as subsidiary and helpful to the reparative work. Their proper purpose is two-fold, namely, to get things ready, and then aid in the proper manipulations which disease has made difficult and almost impossible for Nature to accomplish, for though its power is very great, it is thus sadly handicapped.

Although our armamentarium is filled with remedies, distracting in number and variety, there are, for our use with the neuroses, chiefly two kinds and the really valuable ones in each kind are comparatively few. Of these two varieties, viz., sedatives and tonics, the five antique ones that I men-

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tioned, have stood the test of time, though perhaps, they are on the whole no better than some others such as arsenic, ergot, phosphorus, caffeine,* coca, strychnia, acetanilid, phenacetin, trional, paraldehyde, *et hoc genus omne.* All these new as well as old, are uncertain and sometimes very disappointing. I have no favorites among them. When one fails me, even my best one, as is often the case, why, I try another and so on. But I have used medicines very sparingly I have never placed the prevailing popular reliance upon them. I do not believe that I ever cured a patient with medicine alone. Alteratives and nerve-tonics and sedatives have their place, but they can never do the work of alimentation and reparation. They will stop for a time neuralgic and other pains if they are suitably and skilfully used. They can contract dilated blood vessels where that work is needed. They perhaps act "alteratively" (whatever that may mean) on nerve-cells and fibers. So, having found the probable cause of a given neurosis, be it one of poisoning, starvation, fatigue, or shock, I have been wont to select the remedies which my experience tells me to be the most suitable and efficient for that discovered cause. I then,—and then only—proceed, the best I know how, to repair the mischief by means of rest, or exercise, fresh air, and food, and sleep. I seek thus to build up my patient's run-down constitution,—making much use of the modern remedial adjuvants and

* Or coffee, tea, and perhaps tobacco. These might be of great service where now it is otherwise, if this could only be used moderately and under medical supervision and control. They can be, and have often been, made harmless and efficient sedatives and stimulants to thousands of weary doctors and disconsolate neurotics. The indiscriminate warfare upon them, waged in some quarters, is unscientific and inhuman. In my own experience, and in that of many others, I have found that a cigar would secure refreshing sleep better than anything else;—also that coffee, as a food and medicine, had no superior.

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agencies, also, such as electricity, massage, hypnotism, suggestion, baths, and so on. But why should I enumerate further? All of these appliances and many others have been more or less useful to me. But I have thought they have been so largely because of their potent effect on the minds of my patients, who can *see* and *feel* that something is being done.

And thus it is, I opine,* with much that we do for our neurotic patients. That which acts on their mind is, perhaps, of as much actual value in the promotion of their recovery as anything else, inasmuch as seemingly all other effort is of no use, or of very little account, unless it be accompanied with appropriate *mental* stimulus.

In conclusion, suffer now, a word of personal reminiscence. When, forty years ago, I was a victim of a most persistent and wearisome neurasthenia, I firmly believe that it was the wonderful personal power of my physician,† Dr. S. W. Thayer of blessed memory,—it was the marvellous magnetism of that noble man, that had quite as much to do with my ultimate recovery as anything, and indeed everything else that was done for me.

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* My opinion is formulated somewhat as follows: If,—as we admit,—*malignant* influences, emotional and mental, are potent in *causing* disease why should not *benignant* influences, emotional and mental, be equally powerful in *curing* disease? The trouble is that we have not yet learned how to use the latter effectually. They certainly should not be wholly divorced from appropriate medical treatment.

† As confirmatory of this view let me quote the words of Dr. S. E. Lawton who concludes his most admirable paper on Neurasthenia, read recently before this Society, as follows: "Do not forget that the physician himself, has psychical influence, his ability to infuse hope and inspire confidence, his oft repeated reassurances and crumbs of comfort, his pains-taking and even solicitous oversight, are after all the most important factors and stand head and shoulders above any other measure, in the treatment of Neurasthenia."

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DISCUSSION.

Dr. Clarke.—I think this has been one of the most interesting papers that I have ever heard at this meeting, and it is one of the things which I came here to hear and if I can not do anything else, I wish to thank the Doctor for the presentation which has been made by him. I do not feel competent to discuss this paper from a scientific standpoint, but during the last four or five years I have had to do with quite a number of neurotic cases, and I am sure that many of the hints which the Doctor has given us will be very valuable to me, and so I say that I wish to express my appreciation of this paper.

Dr. Willard.—I should like to say a little in regard to remedies. I have ignored the modern remedies, but I don't want to be misunderstood in that I do not use them, for I do. I would, however, use the older remedies in preference to the new.

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A New Method of Treatment for Chronic Anterior Urethritis and for the Declining Stage of Acute Urethritis.

By William Warren Townsend, M. D., Rutland.

Mr. President and Gentlemen of the Vermont State Medical Society:—By the term chronic urethritis is understood an inflammatory process, involving the urethra subsequent to an acute invasion of that canal. It may be localized in any part of the urethra, that is to say, in the anterior or posterior portion.

However, as it is the purpose of this paper to treat upon the form of urethritis that is the "bete noir" of the general practitioner, chronic anterior urethritis, I will merely mention the fact that chronic posterior urethritis oftentimes exists independently for some time after the chronic anterior condition is cured, and very frequently co-exists with anterior urethritis, but as that condition (chronic posterior urethritis) demands a separate and distinct form of treatment, I will confine my remarks to the treatment of that form which is most common,—chronic anterior urethritis.

Chronic anterior urethritis results from a previous acute, inflammatory condition of the urethra and inasmuch as acute urethritis has the natural tendency to linger indefinitely in the tissues, and with the inability to control the physical forces of one's patients, who most generally are obliged to continue at their usual vocations during the acute stages, and who are apt at the first indication of the diminishment

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of discharge, to indulge in alcoholic and sexual excesses, it is not to be wondered at that the condition becomes chronic, and especially so when one stops to consider the virulency of the gonococcus and the great disadvantages that have to be overcome in the management of the cases.

Too protracted and energetic treatment in the early stage will tend to assist in the disease becoming chronic, and the popular habit of "seeking discharge" by stripping the penis prior to urination, and at various times during the day, adds materially in promoting chronicety, by burying the germ-laden pus cell deep into the submucosa.

The condition of anterior urethritis is popularly known as gleet and numerous are the preparations advertised to cure. Most of them consist of injections of zinc and copper and the internal medicants are, as a rule, balsamic in character.

The pathological appearances of the lesions as determined by the endoscope in chronic anterior urethritis vary. Follicular inflammation shows itself in small, deep red pus oozing, spots varying in size from that of a pin head to a pea; likewise does inflammation of the lacuna magna and other crypts show itself. A deep red, purplish color of the thickened mucous membrane is the most constant morbid symptom and may vary in extent, involving a segment of the canal or simply cover a limited portion,—associated with this form, one will most generally find a generous pus secretion.

Another condition in which there is epithelial hyperplasia and a budding appearance of little eminences caused by the growth of new capillary vessels, is common and is known as granular urethritis; and a further advancement of this hyperplastic and capillary condition has also been hon-

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ored with the dignity of a name and is described as a separate and distinct condition under the name of papilomatous urethritis.

This has always seemed to the author to complicate the study of the pathological condition of the urethra rather than to simplify. As stated, the papilomatous condition is simply a granular urethritis in an advanced and aggravated stage. Erosions and ulcerations of the urethra are frequently the cause of chronic anterior urethritis. The mucous membrane in this condition, is thickened, red, and does not show the lustre and shining appearance of the surrounding tissue, owing to the loss of the epithelial covering. While all these superficial lesions are observable by the endoscope, there is a deeper exudative process at work in the submucosa and all the superficial appearances are a result of this deeper condition.

"The morning drop" or tear, as it is sometimes called, is the pus accumulation of the night before and may be small in quantity. It is generally greenish white in color and in numerous instances there is just enough of it to seal the meatus; and a separation of these lips will disclose a drop of glary mucus; and it is the alleviation of this symptom that we are frequently put to our wits' end, and I do not believe there is a man within my hearing who has not had a case that has proven rebellious to every effort at treatment attempted by him; and it is for this class of cases that I wish to suggest a form of treatment that in my hands has proven most effective.

Hundreds of remedies have been vaunted in the treatment of gleet and one can hardly pick up a medical journal without seeing this or that remedy suggested as being applicable with good results. And I will state now, that it is not

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my purpose to extol the virtues of any given drug, but to offer to you a method of application that, as stated before, has proven of value to me, and one which I have given a fair trial in a considerable number of cases in the past five years. The actual statistics, I regret I am unable to give, as I treat my cases symptomatically and have been in the habit of using this form of treatment in a special way rather than in a routine manner.

However, it has suggested itself to me, that to the general practitioner, who is not familiar with endoscopy and is too busy or has not the inclination to investigate it, that the use of the instrument I present to you to-day, will accomplish more towards the cure of your chronic cases and in a more scientific manner than the ordinary treatment by means of injections of varying strengths and internal medications. The instrument that I refer to is as follows:

Consisting as it does (see cut) of a (D) glass rod, 22 French, bent at right angles and being perforated by a canal (B) bored through it from end (E) to air chamber (C), and with another canal (A) extending from air chamber (C) and having an outlet at (A). The air chamber (C), as will be seen, is perforated at its proximal end by the openings of the canals (A and B), and its distal end is open except when in the urethra, at which time the urethral walls fall over the end, thus making a closed air chamber.

It is obvious that when this insufflator tube is attached to a powder container at (E) and the powder forced, it will follow the direction of the arrows and reaching the air chamber (C) will become agitated and necessarily a portion will adhere to the moist mucous membrane of the urethral walls, forming the distal wall of the air chamber.

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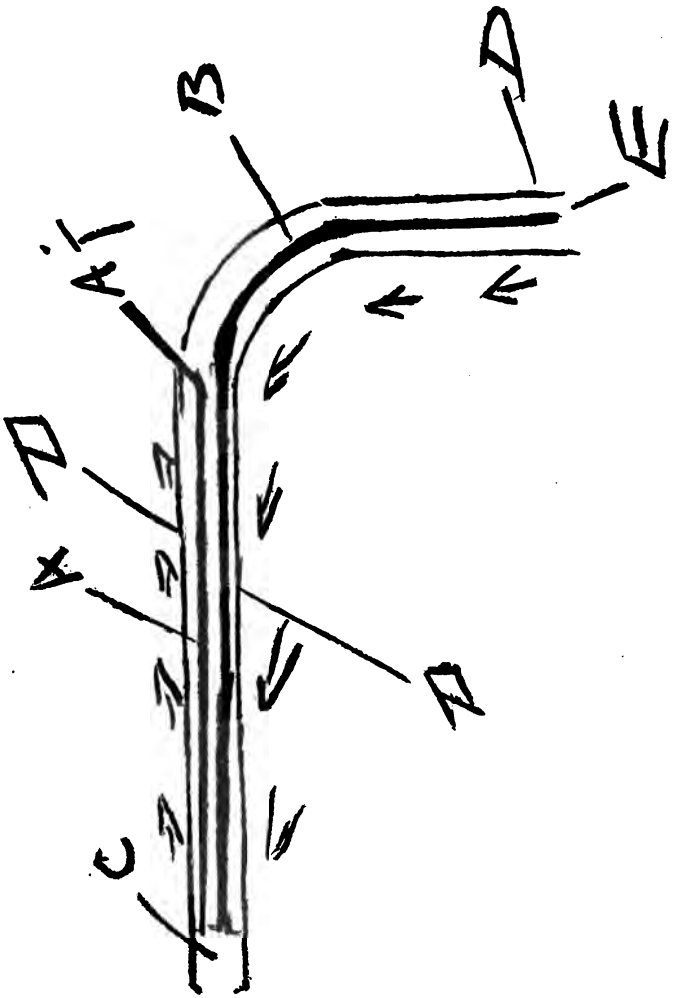
TOWNSEND'S DUPLEX INSUFFLATOR.



As the powder is forced from the container into the insufflator, the tube is gradually withdrawn, and the mucous membrane of the urethra is consequently covered with the

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medicant used. To this insufflator, I have given the name of "Duplex"; as will be seen it can be used in any cavity or sinus as well as in the urethra, and will, I believe, find a field of usefulness by supplying a means of thoroughly applying an impalpable powder to any region desired. It offers the advantage of being simple in construction and being easily cleaned.

Sterilization is accomplished by boiling and it may be dried rapidly by passing through the flame of an alcohol lamp after shaking out any water that may be in the capillary tubes (A and B). Especial care should be given to the last mentioned detail, as if it is done carelessly, the water will boil in the tubes and by the generation of steam, the tubes will crack. Hence, keep in motion while in the flame of the lamp and be sure all the water is out of the capillary tubes before applying heat.

The drugs that I have been in the habit of using are those that are astringent and antiseptic, and any other that suggests itself to me in each individual case. However, will say that the sulphate of copper and zinc combined with the sterate, as put up by a reliable house in New York City, have proved most satisfactory to me. The same house also prepares a combination of the sterate with acetanelid and iodoform.

In the cases where there is a quantity of pus accumulation, I am in the habit of giving several treatments with aristol, prior to applying an astringent. It is impossible, as stated, to set down any hard and fast rule as to the selection of drug or the number of treatments to be given. In my experience, zinc, copper, and aristol have accomplished the desired effect and I have averaged to treat my cases three to four times a week.

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I want it distinctly understood that I recommend this method of administration in chronic anterior urethritis and in the declining stages of the acute condition, and under no circumstances in the early stages, as nothing but harm could accrue from its use at this time; but in the two first mentioned conditions, I consider it a rational treatment as it is a well known surgical fact that astringents and antiseptics are indicated in conditions similar to those presenting themselves in chronic anterior urethritis; and the orthodox treatment for this condition depends upon the unreliable solutions of drugs which are injected into the urethra by the patient and to the ingestion of various balsams which do nothing but exert a bland condition to the urine and do harm by disarranging the assimilation, whereas the condition is a local one and should so be treated.

Those making genito-urinary work a specialty treat the condition of chronic anterior urethritis locally with astringents and antiseptics by means of special instruments which the general practitioner is unfamiliar with, and it was to devise a means of easy access to the morbid urethra that prompted the idea of this little device which, as you will see, has a two-fold action. That of a sound, as by its passage into the urethra the "ironing out" process of the urethral folds is accomplished and at the same time the drug used is being deposited upon any diseased area that may be covered by these folds.

DISCUSSION.

Dr. C. B. Doane.—There is an old saying that we haven't anything to say. I think it is a wise man who knows when not to say it. Really I am unable to give you anything farther than what the Doctor has given you. He

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has covered the subject and left nothing more to be said. If the Doctor has found anything that is of benefit in the treatment of these obstructive cases, he has the thanks of every practitioner. I shall certainly be very glad to try the device. There is no kind of chronic disease where we want to make the patient get the worth of his money, more than we do in chronic urethritis. It is only a short time ago I was called to see an obstructive case. He was an elderly man and was unable to pass water. I passed a soft catheter. I was unable to get in a No. 6, but finally I used a fine probe and was able to pass it in the stricture. He told me he had never had any venereal disease whatever, but he had passed stones from the bladder.

Dr. J. B. Wheeler.—It is a very interesting device. I have never made any attempt to treat urethritis with inhalation of powder. I would like to ask if the urethra can be extended so as to get the powder in all parts?

Dr. W. W. Townshend.—As this tube is passed into the urethra, it occupies the same relation as a sound. As it is being withdrawn, the powder is thrown in. In ordinary routine work I have used about a No. 22. The air does not extend the urethra, for you force very little air in, just enough to expel the powder.

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In Memoriam.

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OBITUARY OF EMORY G. HOOKER.

By Geo. S. Bidwell, Waterbury.

After an illness of three weeks and three days, Dr. Emory G. Hooker died at his home in Waterbury, Vermont, on Wednesday, August 13th, 1902, aged 64 years. His end was not unexpected, as his case had been considered hopeless for several days prior to his demise. His death was due to arterio-sclerosis, which had been slowly undermining his constitution. He engaged in active practice until the day he took to his bed. He was buried with Masonic honors on Aug. 16, the services being held from the Methodist Episcopal church, which was crowded with those among whom he had been accustomed to go up and down in the daily routine of his professional calling for 22 years. The physicians of Waterbury and many from surrounding towns attended in a body.

Dr. Hooker was born in Cabot, Vt., Feb. 19, 1839. When a young man he was employed in a store in Connecticut. From there he went to Michigan, where he was employed in a store and post office. While in Michigan he began the study of medicine and took his first course of lectures at Ann Arbor, assisting himself by teaching school. He afterwards attended the College of Physicians and Surgeons in New York. At one time he was employed in the dispensary of the Military Hospital at Montpelier. In 1864 he entered general practice at Waitsfield, Vt.

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In 1865 he married Catherine L. Kneeland, who survives him. Two children were born to them in Waitsfield, one of whom—Mrs. B. F. Atherton of Duxbury, Vt., still survives.

In 1880 Dr. Hooker moved with his family to Waterbury, Vt., where he continued in active practice till his last illness and death, faithful to his patients to the last.

As a physician he was eminently successful; tender of heart and sympathetic to the last degree. In the Masonic fraternity he was an earnest student and worker, having held many offices of trust. He was well known throughout the State.

As a citizen and neighbor he held a warm place in the hearts of his townspeople; and his memory will be earnestly and affectionately cherished by those whom he had served long and well.

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OBITUARY OF L. D. ROSS.

By M. H. Eddy, M. D., Middlebury.

Dr. Lucretius Dewey Ross was the only child of Paul M. and Charlotte Dewey Ross, and was born in East Poultney, July 4, 1828. When a young man he fitted himself at Troy Conference Academy for college, and entered Middlebury College in 1848, graduating with honor in 1852. In 1857 he received the degree of M. D. from Castleton Medical College, and engaged in the practice of medicine at East Poultney, where he remained until the war broke out. He enlisted in the Fourteenth Regiment Vermont Volunteers, remaining in the service until the close, when he returned home and resumed practice in East Poultney for one year. He then moved to Benson, where he remained until the spring of 1869. Returning to Poultney he continued in his profession and settled in the house where he died,living there continuously. Dr. Ross was married July 4, 1850, to Ada C. Baldwin, and six chillren were the result of this union, all living, two of whom are successful physicians of this State. He died at his residence on Monday morning, Aug. 25, 1902.

Dr. Ross has always been an active participant in town affairs, having held several offices. He was for many years town superintendent of schools, and served as school committeeman for many terms. The doctor was kind and generous, though unpretentious, and when in health never neglected a call to the sick. His practice was large, his friends numerous, and his goodness will be held in remembrance by legions. The funeral was held from his late residence on Beaman street on Wednesday afternoon, Aug. 27, Rev. I. E. Usher, pastor of the Baptist Church, officiating. The G. A. R. had charge of the service at the grave. The bearers were Dr. Lape of Fair Haven and Drs. Horton, Ellis, Lloyd and Clough of Poultney.

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OBITUARY OF BENJAMIN F. SUTTON.

By M. H. Eddy, M. D., Middlebury.

Dr. Benjamin F. Sutton was born at Shelburne, Vt., Aug. 10, 1834. He died at Middlebury on March 13, 1902. He spent his boyhood there on the farm with his parents, acquiring such an education as the common school in the country towns afforded.

When about sixteen years old he went to Bakersfield Academy for one year. From Bakersfield he went to Wisconsin with the view of settling in the West, if he found all things favorable. As near as I can learn he spent five years there teaching school and working on the farm.

Not being satisfied with the West, he returned to Vermont and at the age of twenty-two entered Barre Academy and fitted for college. In the fall of 1857 he entered Vermont University, but in the following spring he left, as his father had died during the winter. Then with his cousin, George Sutton, he went to Castleton and attended a course of lectures in the Castleton Medical College under Dr. Woodward as dean, continuing there two terms.

After a little he went to New York City into a Dr. Nichol's office as a pupil and assistant, and as Dr. Nichol was connected with Bellevue Hospital, he enjoyed frequent opportunities of visiting that institution and there learned much of surgery. After staying about six months with Dr. Nichol in New York, he returned to Vermont and entered the Medical Department of Vermont University, Dr. Thayer, dean, from which he graduated in the spring of 1860.

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On Nov. 17, 1860, he married Fanny Smith, daughter of Luman Smith of Monkton, Vt., and sister of Jerome Smith, late of Burlington. He had one daughter, Lucia Sutton, now the wife of John H. Stewart of Middlebury.

Dr. Sutton first practiced at Alstead, N. H., for about two years; then ten years at Stowe, Vt.; two years at Monkton, Vt. Then he came to Middlebury, Vt., in 1874, from which time he was in constant practice until his death March 13, 1902.

He was a member of the Congregational Church for over forty years. A good practitioner, a valuable citizen, a conservative business man, he left many firm friends to mourn his death.

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CONSTITUTION AND BY-LAWS.

CONSTITUTION.

(As adopted Oct. 9, 1902.)

ARTICLE I.—NAME.

This Society shall be called the Vermont State Medical Society.

ARTICLE II.—HOUSE OF DELEGATES.

Each affiliating County Society in the State shall be entitled to and elect one delegate for every ten active members and one for any additional fraction of more than half that number to represent it at the annual meeting of the parent Society.

At the first annual meeting one-half, or as near as may be, of said delegates shall be elected to serve two years and the remainder for one year. At each subsequent annual meeting a sufficient number of delegates shall be elected to complete the quota of that County.

Alternates may be elected or appointed by County Societies to serve in place of delegates.

The above named delegates shall collectively constitute the House of Delegates of the Vermont State Medical Society, and shall conduct the general business of the annual meeting and elect the officers, and may elect new members as elsewhere provided in this Constitution.

No member of the House of Delegates shall be eligible to any of the offices of this Society. They may, however,

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be elected delegates to other societies or colleges. They shall organize by electing a chairman and clerk.

ARTICLE III.—Officers.

The officers of this Society shall be a President, Vice-President, Secretary, Treasurer, Auditor, Publication Committee of three members, of which the Secretary shall be chairman; Executive Committee of three members, of which the Secretary shall be one *ex-officio,* a Committee on Necrology of three members, a Committee on Legislation of three members, and a Board of License Censors consisting of three members, all of whom shall be elected annually by the House of Delegates, and shall hold their respective offices until the close of the next annual meeting and until their successors are elected.

ARTICLE IV.—Meeting.

There shall be an annual meeting of this Society held on the first Thursday and Friday after the second Wednesday in October, at such place as shall be designated by vote of the House of Delegates at the previous annual meeting.

ARTICLE V.—Membership.

The active membership of this Society shall be the total active membership of all the County Societies that shall vote to affiliate themselves with this Society, and all others who are active members of this Society at the time of the adoption of this amended Constitution.

ARTICLE VI.—Discipline.

Any member of the Society guilty of intoxication, unprofessional or irregular practice, or of gross immorality, or

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for other good reasons, may be expelled or suspended from the Society by a two-thirds vote of the House of Delegates present at any annual meeting.

ARTICLE VII.

This Constitution may be repealed, altered or amended at any annual meeting, by a vote of two-thirds of the members present, provided such repeal, alteration or amendment be proposed at a previous annual meeting.

ARTICLE VIII.

This Society shall be an integral part of the American Medical Association, and shall elect delegates and shall transact other necessary business in accordance with the Constitution and By-Laws of the American Medical Association.

ARTICLE IX.

The House of Delegates may adopt such By-Laws, not repugnant to this Constitution and may repeal, alter or amend the same in such manner as a majority of the said House of Delegates at any annual meeting may deem proper.

BY-LAWS.

ARTICLE I.

SECTION 1. The President shall preside at all meetings and perform all the duties incident to such office. He shall deliver, or cause to be read, an address or dissertation on some medical subject at the annual meeting at which he presides.

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SEC. 2. The Vice-President shall preside in the absence of the President, and shall perform all his duties and possess all his privileges. He shall deliver, or cause to be read, on the first day of the annual meeting, an address on medicine or surgery.

SEC. 3. The Secretary shall keep a record of the proceedings of the Society, and of the members present at each meeting; shall conduct the correspondence; shall procure a stenographer to report the proceedings of each meeting, and shall have his necessary expenses defrayed from the funds of the Society. He shall, if unable to attend the meeting of the Society personally, send the records to some member in attendance.

SEC. 4. The Treasurer shall collect from the Treasurer of the County Societies and disburse all moneys of the Society agreeably to the directions of the House of Delegates, and shall make report of his doings to the Society at its annual meeting.

SEC. 5. The Auditor shall examine and verify the accounts of the various officers.

SEC. 6. The Executive Committee shall make selection of a subject or subjects for the program and appoint a Committee of Arrangements of three members for the next ensuing meeting; shall make assignments of parts to any of the members, as in their judgment they think advisable, and report the same to this meeting and to each and every subsequent meeting.

They shall make such other arrangements for the meetings of the Society as they shall deem essential for its best interests.

SEC. 7. The Committee of Arrangements shall be residents of the town where the meeting is to be held. They

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shall make arrangements for the place of meeting, for a banquet on the evening of the first day, and for space for medical and surgical exhibits, and such other local arrangements as they may deem essential for the success of the meeting.

SEC. 8. The Publication Committee shall receive all papers referred to them by the Society, and as soon as possible subsequent to the annual meeting of the Society shall publish such of those papers as they shall deem best suited to promote the interests of the profession and the public good, under the title, Transactions, and perform all other appropriate duties.

SEC. 9. The Committee on Necrology shall report the names of deceased members, and shall cause to be prepared such brief biographies as may in each case be deemed best.

SEC. 10. It shall be the duty of the Board of License Censors to issue license certificates to regular physicians wishing to practice medicine in this State, in accordance with the State laws regulating such practice.

SEC. 11. It shall be the duty of the Committee on Legislation to receive and examine all resolutions or proposed laws or acts pertaining to medical legislation which may come up at any meeting, and to report on the same at the meeting then in session; also to have charge of all legislative business of the Society which may properly come before the Legislature for enactment, as the Society may direct.

ARTICLE II.—DUES.

SECTION 1. Each County Treasurer shall at each annual meeting collect the sum of one dollar for the State Society in addition to any amounts that may be voted by the County Societies for their own use, and forward the same to the Treasurer of the State Society, on or before October 1st of each year.

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SEC. 2. Any member who shall fail to pay his dues for a period of three years shall be dropped from the Society, and his name stricken from the roll of membership, and he shall be so notified by the Treasurer.

SEC. 3. Any member who has been dropped from the Society for the non-payment of dues may be reinstated by paying all arrears, or re-elected after any number of years by a vote of three-fourths of the House of Delegates present at any regular meeting upon payment of three years' arrearages.

SEC. 4. No member shall receive the Transactions unless his dues are paid for the fiscal year or years for which they are issued.

ARTICLE III.—HONORARY MEMBERS.

The Society may elect at each annual meeting, not more than two honorary members, non-residents of the State, who shall have the same privileges as ordinary members, except that they shall not be eligible to office nor have the right to vote.

ARTICLE IV.—DELEGATES.

Delegates shall be appointed annually to represent this Society in the Medical Department of the University of Vermont and of Dartmouth College at the examination of candidates for graduation, and credentials shall be issued to such delegates by the Secretary when he is duly notified of the time and place of such examinations; the Connecticut River Valley Medical Society; the White Mountain Medical Association; the White River Valley Medical Association; the State Medical Societies of the New England States, together with those of New York, and such other States and Societies as the mutual interests of the Societies may direct.

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In cases where delegates are unable to attend to the duties of their appointment, it shall be their duty to notify the Secretary of such inability, and the Secretary and President shall apoint others to supply their places.

ARTICLE V.

One member of the Society shall be appointed by the Secretary to open the discussion on each paper to be presented at any meeting.

ARTICLE VI.

Any member wishing to withdraw from the Society shall be permitted to do so on his written request after he shall have presented the Treasurer's receipt for all moneys due.

ARTICLE VII.

The Constitution and By-Laws, together with the names and residences of the members in good standing, shall be published in every volume of the Transactions.

ARTICLE VIII.

The names of deceased members of the Society, with the dates of birth, graduation, admission to membership, death and such other items in brief, of personal history, as may seem desirable to the Committee on Publication, shall be printed in each copy of the Transactions, under the caption, "In Memoriam."

ARTICLE IX.

No author shall consume more than twenty minutes in reading or presenting a paper, and no one shall speak more than five minutes in the discussion of a paper, without unanimous consent of the members present.

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ARTICLE X.

All addresses and papers presented in the County and State Societies thereby become the property of the State Society, and shall be placed in the hands of the Secretary within one week after the meetings for insertion in the Transactions.

ARTICLE XI.

The program as prepared by the Executive Committee and published in accordance with the By-Laws by the Secretary shall constitute the order of business, and can not be changed or suspended, except for a definite purpose, a limited time and by a two-thirds vote of the members present.

ARTICLE XII.

Any member not present, or not ready to respond when his name is called, shall forfeit his position on the program.

ARTICLE XIII.

The Committee of Arrangements of each annual meeting shall grant the privilege of exhibition, under the auspices of the Society, only to such pharmaceutical preparations as are recognized by the United States Pharmacopœia, or are not protected by trade mark, secrecy of preparation or other exclusive proprietorship.

ARTICLE XIV.

The Treasurer is authorized to pay the necessary expenses of the members of the Board of License Censors, for traveling, printing, postage, etc., incurred by them in the performance of their duty.

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ARTICLE XV.

The officers of the State Society and the Presidents of the affiliating County Societies shall collectively be designated the Council and shall manage the affairs of the Society when not in session.

The meetings of this Council shall be called by the President at his discretion or whenever requested in writing by five members of the Society.

ARTICLE XVI.

In counties not having a society, any physician in good standing may become a member of the society of any adjoining county, or may be elected to membership in the State Medical Society upon recommendation of a member of the Board of Censors, by a two-thirds vote of the House of Delegates and by paying the annual dues and complying with the other rules and regulations of the State Society.

ARTICLE XVII.

The House of Delegates shall report through its Clerk its actions to the Society at the opening of each session, provided the House of Delegates shall have held a session prior to that time and shall present through its Clerk a report of all its actions to the Secretary of the Society, which report shall be a part of the records and be published in the Transactions.

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List of Members.

G. F. Adams ..... West Derby
C. R. Aldrich ..... Brattleboro
W. J. Aldrich ..... St. Johnsbury
O. H. Allard ..... Burlington
E. S. Allbee ..... Bellows Falls
L. Allen ..... Burlington
J. M. Allen ..... St. Johnsbury
C. E. Allen ..... Swanton
L. B. Allen ..... Post Mills
B. J. Andrews ..... Burlington
G. R. Anderson ..... Brattleboro
W. H. Austin ..... Rupert
E. S. Averill ..... Brandon
†J. W. Avery ..... Noroton, Conn.
E. H. Bailey ..... Graniteville
C. H. Bates ..... Ludlow
E. A. Bates ..... Highgate
E. H. Bates ..... Highgate
G. L. Bates ..... Morrisville
H. D. Belden ..... St. Albans
F. D. Badger ..... Coventry
A. C. Bailey ..... Randolph
O. C. Baker ..... Brandon
E. V. Baldwin ..... Castleton
Anna E. Barker ..... Burlington
H. A. Barrows ..... Stowe
C. W. Bartlett ..... North Bennington

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F. W. Baylies ..... Burlington
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A. H. Bellerose ..... Rutland
G. C. Berkley ..... St. Albans
W. D. Berry ..... Waterbury
F. N. Bibby ..... East Middlebury
G. S. Bidwell ..... Waterbury
A. L. Bingham ..... Williston
L. M. Bingham ..... Burlington
A. B. Bisbee ..... Montpelier
E. G. Blaisdell ..... Bridport
W. C. Blake ..... Lyndon
J. F. Blanchard ..... Newport
J. H. Blodgett ..... Saxton's River
N. R. Blossom ..... Rutland
C. V. Bogue ..... Newport
H. A. Bogue ..... Richford
†H. E. Bogue ..... Salisbury
G. W. Bolton ..... West Burke
C. H. Bonney ..... Ludlow
C. O. Boyden ..... Bridgewater
H. Boynton ..... Woodstock
C. W. Brigham ..... Pittsfield
F. C. Brigham ..... Jamaica
F. L. Brigham ..... Pittsfield
F. L. Brigham ..... Windsor
J. C. Breitling ..... Lunenburgh
J. D. Brewster ..... Windsor
C. A. Brown ..... Ludlow
E. M. Brown ..... Sheldon

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W. N. Bryant ..... Ludlow
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M. L. Bugbee ..... White River Junction
H. G. Bullard ..... St. Johnsbury
O. M. Bump ..... Salisbury
L. W. Burbank ..... Cabot
D. L. Burnett ..... South Royalton
C. H. Burr ..... Montpelier
A. J. Byam ..... East Dorset
D. H. Calder ..... Brattleboro
C. F. Camp ..... Barre
C. M. Campbell ..... Rochester
E. R. Campbell ..... Bellows Falls
F. W. Carpenter ..... West Rupert
O. E. Carter ..... Danville
J. H. Cartey ..... Fair Haven
C. S. Caverly ..... Rutland
R. M. Chase ..... Bethel
C. E. Chandler ..... Montpelier
M. L. Chandler ..... Barre
A. A. Cheney ..... Lyndonville
E. J. Child ..... Bethel
A. S. M. Chisholm ..... Bennington
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A. A. Clafflin ..... St. Albans
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J. M. Clarke ..... Burlington

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B. D. Colby ..... Sudbury
James Conland ..... Brattleboro
J. W. Copeland ..... Lyndonville
J. W. Courtney ..... Burlington
C. A. Cramton ..... St. Johnsbury
H. A. Crandall ..... Burlington
W. R. Crain ..... Rutland
E. M. Crane ..... Hardwick
A. L. Cross ..... Swanton
W. F. Cummings ..... Derby
J. M. Currier ..... Newport
E. B. Daley ..... Bennington
S. E. Darling ..... Hardwick
A. J. Darrah ..... Enosburgh Falls
A. Davidson ..... St. Albans
H. C. Day ..... Bennington
F. E. Dean ..... South Shaftsbury
N. J. Delahanty ..... Rutland
H. A. Deslorges ..... St. Albans
J. S. Deziel ..... Barre
E. E. Dickerman ..... West Burke
F. D. Dillingham ..... Craftsbury
C. B. Doane ..... Springfield
J. H. Dodds ..... Burlington
J. A. Dow ..... West Topsham
Geo. Dunsmore ..... St. Albans
C. Dustan ..... Craftsbury
C. B. Dunn ..... Swanton
J. S. Eastwood ..... Brandon
M. H. Eddy ..... Middlebury

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J. W. Estabrook ..... Brandon
E. P. Fairman ..... Hardwick
F. E. Farmer ..... Middlebury
L. L. Fillmore ..... Bennington
T. A. Flandreau ..... Bondville
G. S. Foster ..... Putney
G. H. Fox ..... Rutland
H. A. Francisco ..... Rutland
J. N. Gaines ..... Newport
F. P. Gale ..... Plainfield
J. E. Galvin ..... Londonderry
T. F. Gartland ..... White River Junction
R. A. Gatchell ..... Charleston
W. W. Genge ..... Hyde Park
J. M. Gibson ..... McIndoe Falls
W. H. Giddings ..... Bakersfield
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L. H. Gillette ..... Wilmington
J. B. Gilman ..... Pawlet
W. F. Gilman ..... Barre
D. A. Gleason ..... North Bennington
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H. S. Goodall ..... Bennington
W. L. Goodale ..... Montpelier

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O. D. Greene ..... Bethel
J. W. Gregg ..... Brattleboro
C. E. Griffin ..... Fair Haven
J. R. Grimes ..... Montpelier
A. P. Grinnell ..... Burlington
W. H. Grinnell ..... Danby
D. D. Grout ..... Waterbury
T. H. Hack ..... Proctor
J. B. Hall ..... Franklin
J. H. Hamilton ..... Richford
J. M. Hamilton ..... Rutland
S. W. Hammond ..... Rutland
J. D. Hanrahan ..... Rutland
J. B. Hare ..... Franklin
W. R. Harkness ..... Montpelier
J. E. Hartshorn ..... St. Johnsbury
W. L. Havens ..... Chester Depot
D. C. Hawley ..... Burlington
N. L. T. Hayes ..... Graniteville
W. F. Hazleton ..... Bellows Falls
L. A. Heidel ..... Rutland
J. T. Hefflon ..... Franklin
L. H. Hemenway ..... Manchester
H. H. Heyward ..... Tunbridge
A. S. C. Hill ..... Burlington
J. S. Hill ..... Bellows Falls
C. S. Hodgkins ..... Castleton

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C. W. Howard ..... Shoreham
H. T. J. Howe ..... Waitsfield
E. F. Hoyt ..... Sandgate
L. W. Hubbard ..... Lyndon
H. V. Hubbard ..... Barnard
H. F. Hull ..... Proctorsville
W. D. Huntington ..... Rochester
W. M. Huntington ..... Rochester
F. S. Hutchinson ..... Enosburgh Falls
W. R. Hutchinson ..... Enosburgh Falsl
W. W. Hutchinson ..... Enosburgh Falls
H. C. Ide ..... McIndoe Falls
H. C. Jackson ..... Norwich
J. H. Jackson ..... Barre
J. W. Jackson ..... Barre
F. K. Jackson ..... Burlington
H. N. Jackson ..... Burlington
Henry Janes ..... Waterbury
J. N. Jenne ..... St. Albans
C. K. Johnson ..... Burlington
C. U. Johnson ..... West Berkshire
R. T. Johnson ..... West Concord
R. W. Johnson ..... Burlington
H. R. Jones ..... Benson
H. O. Joyal ..... Enosburgh Falls
J. C. Keenan ..... Rutland
I. C. Kenney ..... Sharon
F. T. Kidder ..... Woodstock

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W. D. M. Knowles ..... Mt. Holly
J. Knowlson ..... Poultney
W. H. Laune ..... Readsboro
R. Lape ..... Fair Haven
W. E. Lawrence ..... Worcester
S. E. Lawton ..... Brattleboro
W. F. Lazell ..... Plainfield
W. E. Lazell ..... Barre
C. S. Leach ..... Morrisville
C. S. L. Leach ..... Swanton
H. E. Lewis ..... Burlington
F. C. Liddle ..... Dorset
F. C. Ligouri ..... Barre
Wm. Linsey ..... Montpelier
C. W. Locke ..... Springfield
B. D. Longe ..... Newport
E. P. Lunderville ..... St. Albans
W. A. Lyman ..... Burlington
J. T. Lyston ..... Rutland
E. B. Mack ..... Woodstock
M. S. Marshall ..... Montpelier
G. G. Marshall ..... Wallingford
E. H. Martin ..... Middlebury
F. A. Mason ..... St. Albans Bay
S. E. Maynard ..... Burlington
A. I. Miller ..... Brattleboro
C. W. Milliken ..... Copperfield
A. L. Miner ..... Bellows Falls
D. G. Molinelli ..... Barre
H. N. Montefiore ..... Quechee
F. C. Morgan ..... Felchville

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J. C. Morgan ..... Stowe
J. D. McArthur ..... East Barre
M. F. McGuire ..... Montpelier
P. H. McMahon ..... Burlington
P. E. McSweeney ..... Burlington
J. E. McSweeney ..... Barre
W. S. Nay ..... Underhill
L. A. Newcomb ..... Montpelier
H. L. Newell ..... East Randolph
C. P. Newton ..... Underhill Centre
J. P. Newton ..... Benson
R. N. Newton ..... Barre
L. B. Newton ..... North Bennington
G. H. Newton ..... Cambridge
E. M. Nichols ..... Barton
I. S. Nowlan ..... South Strafford
J. F. O'Brien ..... Bellows Falls
F. H. O'Connor ..... Bellows Falls
F. L. Osgood ..... Saxton's River
F. L. Osgood ..... Townshend
L. F. A. Ouillette ..... St. Albans
H. L. Pache ..... Burlington
S. W. Paige ..... St. Albans
W. L. Paine ..... Royalton
G. D. Parkhurst ..... Fair Haven
L. J. Paris ..... Burlington
H. Ray Patton ..... East Fairfield
A. D. Patton ..... East Fairfield
C. A. Pease ..... Burlington
C. W. Peck ..... Brandon
R. N. Pelton ..... Richford
C. C. Perry ..... West Rutland

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F. C. Phelps ..... Vergennes
W. S. Phillips ..... Arlington
W. M. Pierce ..... Newbury
Edward Pilon ..... Vergennes
William N. Platt ..... Shoreham
Mary M. Platt ..... Shoreham
E. M. Pond ..... Rutland
C. S. Pratt ..... Brattleboro
F. S. Pratt ..... Bennington
R. G. Prentiss ..... Johnson
C. A. Prevost ..... St. Johnsbury
J. W. Racette ..... Bennington
A. J. Radike ..... Burlington
E. M. Ranney ..... Barton Landing
C. W. Ray ..... Chester
W. D. Reid ..... Barre
Thomas Rice ..... Townshend
F. A. Rich ..... Burlington
Deane Richmond ..... Windsor
E. G. Roberts ..... Fair Haven
J. W. Robbins ..... Morrisville
V. M. Rogers ..... Quechee
C. B. Ross ..... West Rutland
L. H. Ross ..... Bennington
E. H. Ross ..... St. Johnsbury
E. F. Root ..... East Burke
C. C. Rublee ..... Morrisville
J. T. Rudden ..... Bellows Falls
S. A. Russalow ..... Randolph
E. P. Russell ..... Middlebury

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*J. C. Rutherford ..... Newport
George Rustedt ..... Rutland
J. S. Sanford ..... Castleton
C. S. Scofield ..... Richford
A. W. Scott ..... Lunenburgh
B. C. Senton ..... Rutland
C. A. Shaw ..... Northfield
O. W. Sherwin ..... Woodstock
R. Sherwood ..... St. Albans
†E. W. Shipman ..... Vergennes
W. T. Slayton ..... Hyde Park
M. L. Smail ..... Wilder
A. B. Smith ..... Chelsea
C. C. Smith ..... Gaysville
J. M. Stafford ..... East Middlebury
M. P. Stanley ..... White River Junction
†Hall Staples ..... Waltham, Mass.
S. G. Start ..... Cambridge
W. M. Stearns ..... Rutland
W. S. Stevens ..... St. Albans
J. A. Stevenson ..... Chester
C. L. Stewart ..... Randolph
O. G. Stickney ..... Barre
N. C. Stiles ..... St. Johnsbury
T. R. Stiles ..... St. Johnsbury
F. R. Stoddard ..... Shelburne
O. R. Stoddard ..... North Ferrisburgh
B. H. Stone ..... Burlington
C. W. Strobell ..... Rutland
H. H. Swift ..... Pittsford

* Deceased. † Removed from State.

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J. D. Tanner ..... Winooski
J. E. Thompson ..... Rutland
W. N. Thompson ..... Brattleboro
W. J. Tindall ..... Williamstown
H. C. Tinkham ..... Burlington
H. L. Townsend ..... Bridport
W. W. Townshend ..... Rutland
J. J. Trudell ..... Rutland
E. V. Trull ..... Manchester
M. C. Twitchell ..... Burlington
W. H. H. Varney ..... Charlotte
*W. H. Vincent ..... Orwell
L. E. Wakefield ..... Fair Haven
H. L. Waterman ..... Brattleboro
H. R. Watkins ..... Burlington
C. C. Waller ..... North Troy
E. L. Washburn ..... East Berkshire
E. B. Watson ..... Williamstown
H. L. Watson ..... Montpelier
J. W. Watson ..... West Hartford
D. P. Webster ..... Brattleboro
R. E. Welch ..... Franklin
J. L. Welch ..... Proctor
E. S. Weston ..... New Haven
J. B. Wheeler ..... Burlington
T. E. Whipple ..... Danby
F. E. Whipple ..... Manchester Center
E. O. Whipple ..... Danby
P. P. White ..... Williamsville
W. J. White ..... North Ferrisburgh
H. L. Wilder ..... Burlington
A. J. Willard ..... Burlington

* Deceased.

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Geo. F. B. Willard ..... Vergennes
R. F. Willard ..... West Topsham
J. H. Winch ..... Northfield
M. J. Wiltse ..... Burlington
J. R. Woodhull ..... North Bennington
A. T. Woodward ..... Brandon
J. H. Woodward ..... New York City
H. O. Worthen ..... Barre
J. F. Wright ..... Barton Landing

Total, 384.

HONORARY MEMBERS.

Conn, G. P.	Concord, N. H.	1869
Crothers, T. D.	Hartford, Conn.	1892
Cook, Geo. H.	Natick, Mass.	1901
Douglas, O. B.	Concord, N. H.	1891
Ferguson, E. D.	Troy, N. Y.	1896
Field, A. E.	Barre, Vt.	1890
Gordinier, H. C.	Troy, N. Y.	1902
Gordon, S. C.	Portland, Me.	1895
Irish, J. C.	Lowell, Mass.	1894
Kellogg, D. S.	Plattsburgh, N. Y.	1892
Lockhart, F. A. L.	Montreal	1899
Lyon, E. M.	Plattsburgh, N. Y.	1892
Mabon, William	Ogdensburgh, N. Y.	1897
Marcy, Henry O.	Boston, Mass.	1896
Porter, William H.	New York City	1895
Richardson, Maurice H.	Boston, Mass.	1899
Rawson, J. B.	Dannemora, N. Y.	1889
Shattuck, Frederick C.	Boston, Mass.	1894
Stearns, Henry P.	Hartford, Conn.	1899
Watson, H. P.	Manchester, N. H.	1887
Weeks, S. H.	Portland, Me.	1901
Wiggin, F. H.	New York City	1901

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LIST OF PRESIDENTS SINCE 1851.

Goldsmith, M.	Rutland	1851
Palmer, B. W.	Woodstock	1852
Thayer, S. W., Jr.	Northfield	1853
Warner, E. D.	New Haven	1854
Perkins, Joseph	Castleton	1855
Carpenter, Walter	Randolph	1856
Stevens, H. F.	St. Albans	1857
Allen, C. L.	Middlebury	1858
Knights, A. E.	Springfield	1859
Morgan, B. F.	Bennington	1860
Woodward, A. T.	Brandon	1861
Stiles, J. N.	Windsor	1862
Bradford, P. D.	Northfield	1863
Fassett, O. F.	St. Albans	1864
McCollom, William	Woodstock	1865
Warner, E. D.	New Haven	1866
Frost, C. P.	Brattleboro	1867
Richmond, J. S.	Woodstock	1868
Janes, Henry	Waterbury	1869
Putnam, S.	Montpelier	1870
Upham, E. F.	West Randolph	1871
Holton, H. D.	Brattleboro	1872
Butler, L. C.	Essex	1873
Butler, L. C.	Essex	1874
Butler, L. C.	Essex	1875
Dunsmore, George	St. Albans	1876
Chandler, C. M.	Montpelier	1877
Bullard, G. B.	St. Johnsbury	1878

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Thayer, S. W.	Burlington	1879
Jackson, J. Henry	Barre	1880
Sherwin, O. W.	Woodstock	1881
Bingham, L. M.	Burlington	1882
Clark, S. S.	St. Albans	1883
Draper, Joseph	Brattleboro	1884
Kemp, D. G.	Montpelier	1885
Brooks, S. T.	St. Johnsbury	1886
Campbell, Edw. R.	Bellows Falls	1887
Clarke, J. M.	Burlington	1888
Brown, H. S.	St. Johnsbury	1889
Jenne, J. N.	St. Albans	1890
Caverly, C. S.	Rutland	1891
Wilder, H. R.	Swanton	1892
Bisbee, A. B.	Montpelier	1893
Linsley, J. H.	Burlington	1894
Branch, C. F.	Newport	1895
Stoddard, F. R.	Shelburne	1896
Rogers, Lyman	Bennington	1897
Lawton, S. E.	Brattleboro	1898
Crain, M. R.	Rutland	1899
Huntington, W. D.	Rochester	1900
Wheeler, J. B.	Burlington	1901
Pond, E. M.	Rutland	1902

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